

3/14/2028

WO 97/32980

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Approved	O.G. FIG.
	CLASS SU
BY	BRAUTSMAN

AMINO ACID SEQUENCES OF A CONSERVED PORTION OF
Tbp1 PROTEIN FOR CONSTRUCTION OF DEGENERATE
PRIMERS USED IN PCR AMPLIFICATION OF A PORTION
OF THE *M. cattarhalis* 4223 *tbpA* GENE.

N E V T G L G

SEQ ID NO: 17

G A I N E I E

SEQ ID NO: 18

FIG.1

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APPROVED	O.G.	FIG.
BY	CLASS	SUBCLASS
BRAFTHMAN		

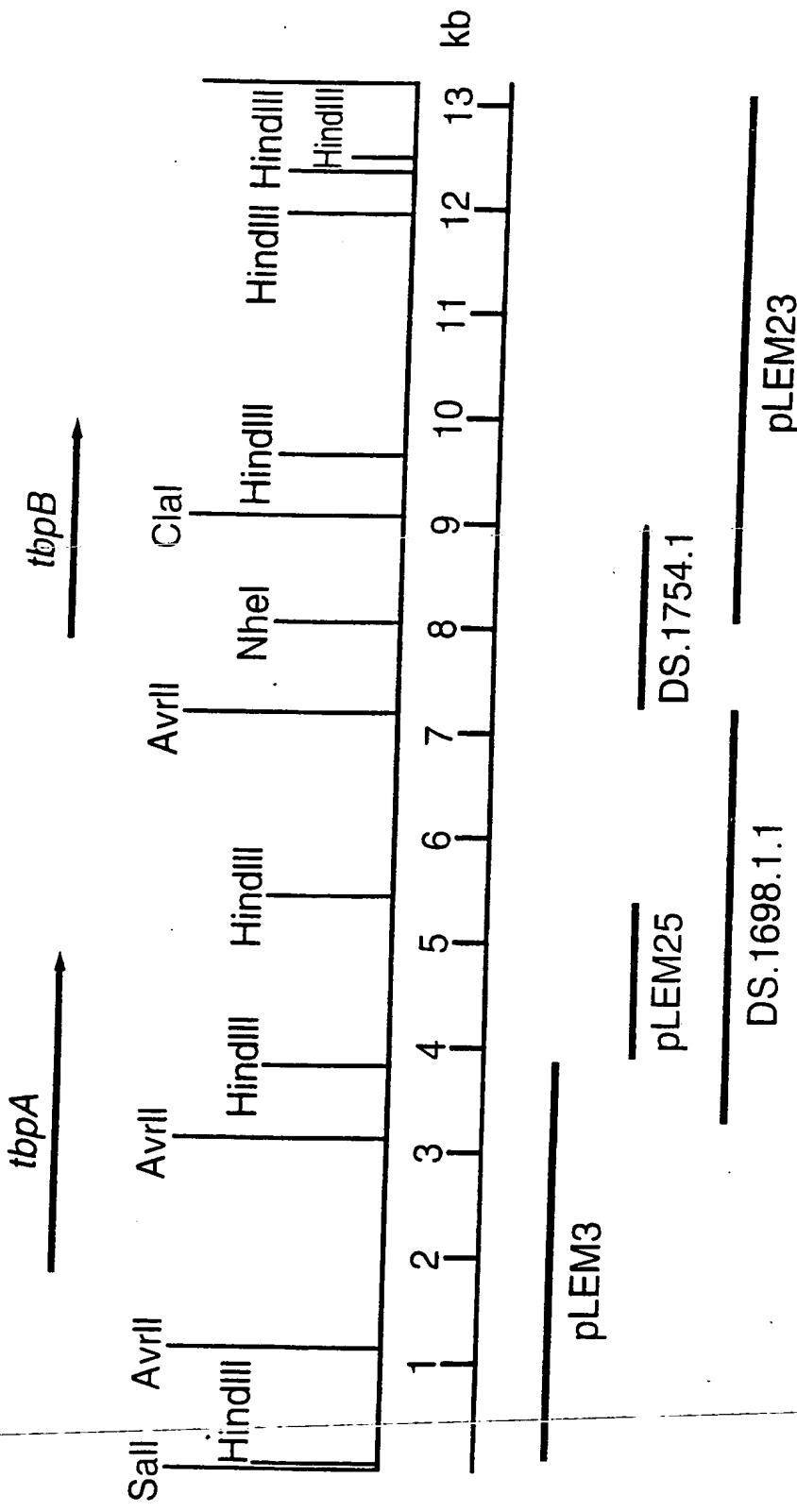
M.catarrhalis 4223 Transferrin Receptor Genes

FIG.2

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BIOLOGY - MICROBIOLOGY

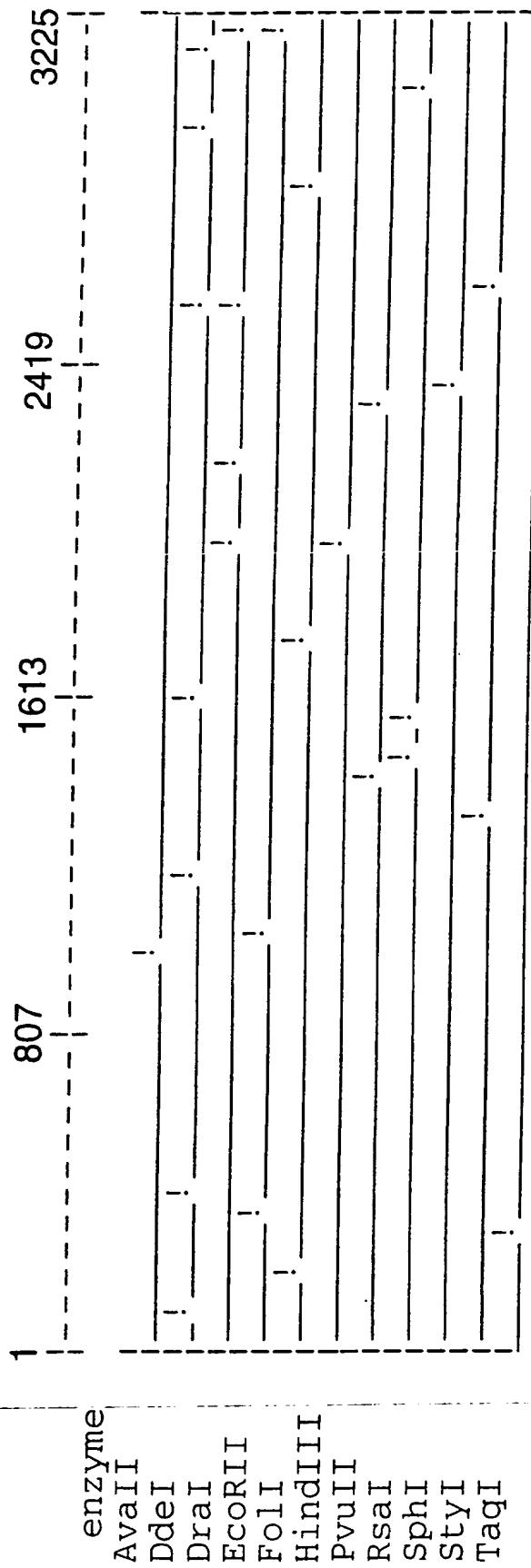
M. catarrhalis 4223 *tbpA* gene

FIG.3

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APPROVED	O.G. FIG.
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DRAFTSMAN	

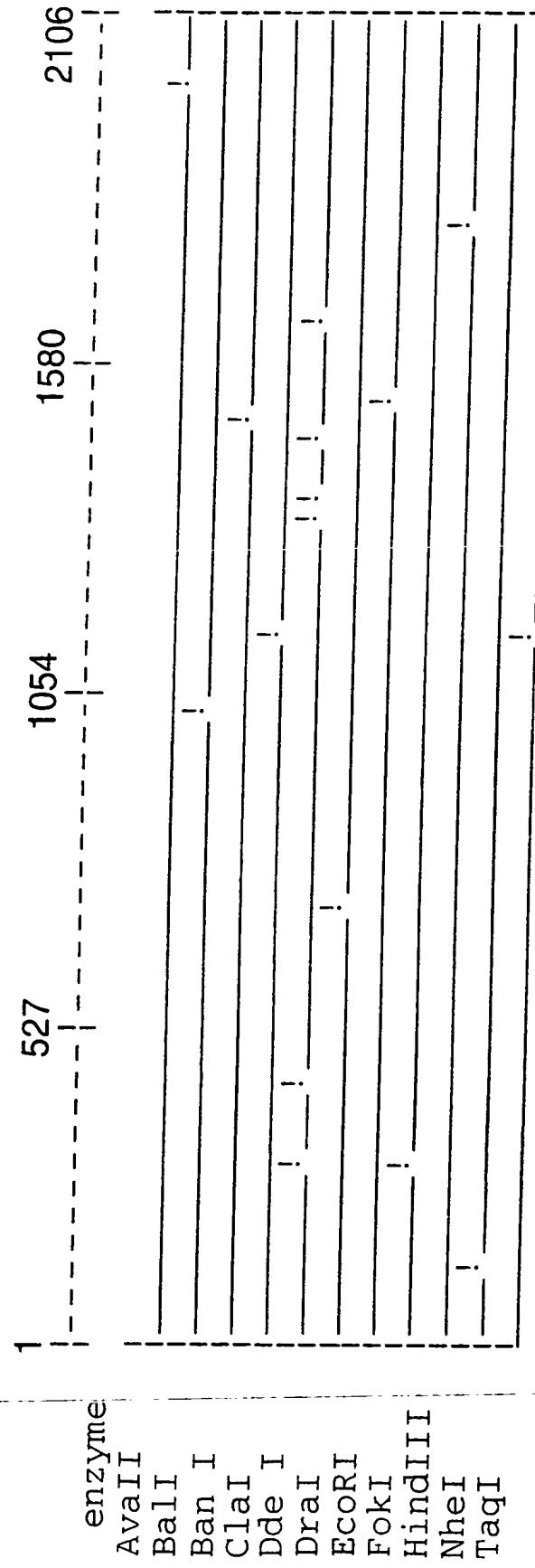
M. catarrhalis 4223 *tbpB* gene

FIG.4

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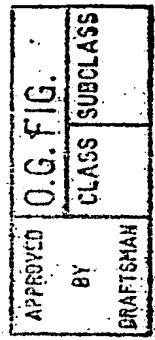


FIG. 5A

Sequence of *M. catarrhalis* 4223 *tbpa* gene

TATTTCAGCAAACTATAACTAACTAAATCAAATTAAATCAGTTGGGTGGCTTAGCAAGCAAATGGT
TATTTCGGTAAACAATTAAAGTTCTTAACACGATAACACGCTCATAAACAGATGGCTTGGCATCTGCAAT
TTGATGCCCTTGATGGTTGGGGTGTATCGGTGTTCAAAAGTGCACAGGCAACAGGTGGTCATTG

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FIG.5B

GGG	CTT	GCT	AAG	GTG	GTC	AAA	ACT	GCC	GAG	ACC	ATC	AAT	AAA	GAA	CAA	GTC	CTA	243	
Gly	Leu	Gly	Lys	Val	Val	Val	Lys	Thr	Ala	Glu	Thr	Ile	Asn	Ile	Asn	Gln	Val	Leu	270
AAC	ATT	CGA	GAC	TTA	ACA	CGC	TAT	GAC	CCT	GGC	ATT	GCT	GTG	GTT	GAG	CAA	GTC	297	
Asn	Ile	Arg	Asp	Leu	Thr	Arg	Tyr	Asp	Pro	Gly	Ile	Ala	Val	Val	Glu	Gln	Gly	324	
CGT	GGG	GCA	AGC	TCA	GGC	TAT	TCT	CGT	ATG	GAT	AAA	AAT	CGT	GTG	GCG	CGC	GGC	351	
Arg	Gly	Ala	Ser	Ser	Gly	Tyr	Ser	Ile	Arg	Gly	MET	ASP	LYS	Asn	Arg	Val	Ala	378	
GTA	TTC	GTT	GAT	GGC	ATC	AAT	CAA	GCC	CAG	CAC	TAT	GCC	CTA	CAA	GGC	CCT	GTG	405	
Val	Leu	Val	Asp	Gly	Ile	Asn	Gln	Ala	Gln	His	Tyr	Ala	Leu	Gln	Gly	Pro	Val	432	
GCA	GGC	AAA	AAT	TAT	GCA	GGT	GCA	GCA	ATC	AAC	GAA	ATA	GAA	TAC	GAA	AAT	GTC	459	
Ala	Gly	Lys	Asn	Tyr	Ala	Ala	Gly	Gly	Ala	Ile	Asn	Glu	Ile	Glu	Tyr	Glu	Asn	486	
GTC	CGC	TCC	GTT	GAG	ATT	AGT	AAA	GGT	GCA	AAT	TCA	AGT	GAA	TAC	GGC	TCT	GGG	513	
Val	Arg	Ser	Val	Glu	Ile	Ser	Lys	Gly	Ala	Asn	Ser	Ser	Glu	Tyr	Gly	Ser	Gly	540	

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FIG. 5C

APPROVED	O.G.	FIG.
BY	CLASS	SUBCLASS
DRAFTERMAN		

GCA	TTA	TCT	GGC	TCT	GTG	GCA	TTT	GTT	ACC	AAA	ACC	GCC	GAT	GAC	ATC	ATC	AAA	594
Ala	Leu	Ser	Gly	Ser	Val	Ala	Phe	Val	Thr	Lys	Thr	Ala	Asp	Asp	Ile	Ile	Lys	
GAT	GGT	AAA	GAT	TGG	GGC	GTG	CAG	ACC	AAA	ACC	GCC	TAT	GCC	AGT	AAA	AAT	AAC	648
Asp	Gly	Lys	Asp	Trp	Gly	Val	Gln	Thr	Lys	Thr	Ala	Tyr	Ala	Ser	Lys	Asn	Asn	
GCA	TGG	GTT	AAT	TCT	GTG	GCA	GCA	GGC	AAG	GCA	GGT	TCT	TCT	AGC	GGT	CTT		702
Ala	Trp	Val	Asn	Ser	Val	Ala	Ala	Ala	Gly	Lys	Ala	Gly	Ser	Phe	Ser	Gly	Leu	
ATC	TAC	ACC	GAC	CGC	CGT	GGT	CAA	GAA	TAC	AAG	GCA	CAT	CAT	GAT	GCC	TAT		756
Ile	Tyr	Thr	Asp	Arg	Arg	Gly	Gly	Gln	Glu	Tyr	Lys	Ala	His	Asp	Asp	Ala	Tyr	
CAG	GGT	AGC	CAA	AGT	TTT	GAT	AGA	GCG	GTG	GCA	ACC	ACT	GAC	CCA	AAT	AAC	CGA	810
Gln	Gly	Ser	Gln	Ser	Phe	Asp	Arg	Ala	Val	Ala	Thr	Thr	Asp	Pro	Asn	Asn	Arg	
ACA	TTT	TTA	ATA	GCA	AAT	GAA	TGT	GCC	AAT	GGT	AAT	TAT	GAG	GCG	TGT	GCT	GCT	864
Thr	Phe	Leu	Ile	Ala	Asn	Glu	Cys	Ala	Asn	Gly	Asn	Tyr	Glu	Ala	Cys	Ala	Ala	
GGC	GGT	CAA	ACC	AAA	CTT	CAA	GCC	AAG	CCA	ACC	AAT	GTG	CGT	GAT	AAG	GTC	AAT	918
Gly	Gly	Gln	Gln	Thr	Lys	Leu	Gln	Ala	Lys	Pro	Thr	Asn	Val	Arg	Asp	Lys	Val	

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Approved BY	O.C. FIG. CLASS	Subclass
DRAFTSMAN		

FIG.5D

GTC	AAA	GAT	TAT	ACA	GGT	CCT	AAC	CCG	CTT	ATC	CCA	AAC	CCA	CTC	ACC	CAA	GAC	972
Val	Lys	Asp	Tyr	Thr	Gly	Pro	Asn	Arg	Leu	Ile	Pro	Asn	Pro	Leu	Thr	Gln	Asp	
AGC	AAA	TCC	TTA	CTG	CTT	CGC	CCA	GGT	TAT	CAG	CTA	AAC	GAT	AAG	CAC	TAT	GTC	1026
Ser	Lys	Ser	Leu	Leu	Leu	Arg	Pro	Gly	Tyr	Gln	Leu	Asn	Asp	Lys	His	Tyr	Val	
GGT	GGT	TAT	GAA	ATC	ACC	AAA	CAA	AAC	TAC	GCC	ATG	CAA	GAT	AAA	ACC	GTC	1080	
Gly	Gly	Val	Tyr	Glu	Ile	Thr	Lys	Gln	Asn	Tyr	Ala	MET	Gln	Asp	Lys	Thr	Val	
CCT	GCT	TAT	CTG	ACG	GTT	CAT	GAC	ATT	GAA	AAA	TCA	AGG	CTC	AGC	AAC	CAT	GCC	1134
Pro	Ala	Tyr	Leu	Thr	Val	His	Asp	Ile	Glu	Lys	Ser	Arg	Leu	Ser	Asn	His	Ala	
CAA	GCC	AAT	GGC	TAT	TAT	CAA	GGC	AAT	AAT	CTT	GGT	GAA	CGC	ATT	CGT	GAT	ACC	1188
Gln	Ala	Asn	Gly	Tyr	Tyr	Gln	Gly	Asn	Asn	Leu	Gly	Glu	Arg	Ile	Arg	Asp	Thr	
ATT	GGG	CCA	GAT	TCA	GGT	TAT	GGC	ATC	AAC	TAT	GCT	CAT	GGC	GTA	TTT	TAT	GAT	1242
Ile	Gly	Pro	Asp	Ser	Gly	Tyr	Gly	Ile	Asn	Tyr	Ala	His	Gly	Val	Phe	Tyr	Asp	

FIG.5E

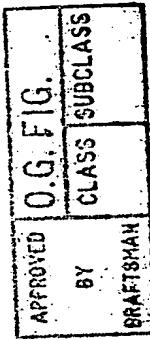
APPROVED BY	O.G. FIG. CLASS	SUBCLASS
DRAFTSMAN		

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GAA AAA CAC CAA AAA GAC CGC CTA GGG CTT GAA TAT GTT TAT GAC AGC AAA GGT	1269	1296
Glu Lys His Gln Lys Asp Arg Leu Gly Leu Glu Tyr Val Tyr Asp Ser Lys G1y		
GAA AAT AAA TGG TTT GAT GTG CGT GTG TCT TAT GAT AAG CAA GAC ATT ACG	1323	1350
Glu Asn Lys Trp Phe Asp Asp Val Arg Val Ser Tyr Asp Lys Gln Asp Ile Thr		
CTA CGC AGC CAG CTG ACC AAC ACG CAC TGT TCA ACC TAT CCG CAC ATT GAC AAA	1377	1404
Leu Arg Ser Gln Leu Thr Asn Thr His Cys Ser Thr Tyr Pro His Ile Asp Lys		
AAT TGT ACG CCT GAT GTC AAT AAA CCT TTT TCG GTA AAA GAG GTG GAT AAC AAT	1431	1458
Asn Cys Thr Pro Asp Val Asn Pro Phe Ser Val Lys Glu Val Asp Asn Asn		
GCC TAC AAA GAA CAG CAC AAT TTA ATC AAA GCC GTC TTT AAC AAA AAA ATG GCG	1485	1512
Ala Tyr Lys Glu Gln His Asn Leu Ile Lys Ala Val Phe Asn Lys Lys MET Ala		
TTG GGC AGT ACG CAT CAC ATC AAC CTG CAA GTT GGC TAT GAT AAA TTC AAT	1539	1566
Leu Gly Ser Thr His His Ile Asn Leu Gln Val G1y Tyr Asp Lys Phe Asn		
TCA AGC CTG AGC CGT GAA GAT TAT CGT TGT GCA ACC CAT CAG TCT TAT CAA AAA	1593	1620
Ser Ser Leu Ser Arg Glu Asp Tyr Arg Leu Ala Thr His Gln Ser Tyr Gln Lys		

FIG.5F

C ^{TT}	G ^A T	T ^A C	A ^C C	C ^{CA}	A ^G T	A ^A C	C ^{CT} T	T ^T G	C ^{CA}	G ^A T	A ^A G	T ^{TT}	A ^G	C ^{CC}	A ^T T	T ^{TA}	
Leu	Asp	Tyr	Thr	Pro	Ser	Asn	Pro	Leu	Pro	Asp	Lys	Phe	Lys	Pro	Ile	Ile	Leu
1647																	1674
G ^{GT}	T ^C A	A ^A C	A ^{AA}	C ^{CC}	A ^{TT}	T ^{GC}	C ^{TT}	G ^A T	G ^C T	T ^A T	G ^{GT}	T ^A T	G ^{GT}	C ^A T	G ^A C	C ^A T	
Gly	Ser	Asn	Asn	Lys	Pro	Ile	Cys	Leu	Asp	Ala	Tyr	Gly	Tyr	Gly	His	Asp	His
1701																	1728
C ^{CA}	C ^A G	G ^C T	T ^G T	A ^A C	G ^C C	A ^{AA}	A ^{CC}	A ^G C	A ^C T	T ^A T	C ^{AA}	A ^A T	T ^{TT}	G ^{CC}	A ^T C	A ^{AA}	
Pro	Gln	Ala	Cys	Asn	Ala	Lys	Asn	Ser	Thr	Tyr	Gln	Asn	Phe	Ala	Ile	Lys	Lys
1755																	1782
G ^{GC}	A ^T A	G ^A G	C ^{AA}	T ^A C	A ^A C	C ^{AA}	A ^{AA}	A ^{CC}	A ^G T	A ^A G	T ^{AT}	G ^{AT}	T ^A T	C ^{AA}	G ^{CC}	A ^{AA}	
Gly	Ile	Glu	Gln	Tyr	Asn	Gln	Lys	Thr	Asn	Thr	Asp	Lys	Ile	Asp	Tyr	Gln	Ala
1809																	1836
AT ^C	AT ^T	G ^A C	C ^{AA}	T ^A T	G ^A T	A ^A A	C ^{AA}	A ^{CC}	A ^G T	A ^A G	T ^{AT}	G ^{AT}	T ^A T	C ^{AA}	G ^{CC}	A ^{AA}	
Ile	Ile	Asp	Gln	Tyr	Asp	Lys	Gln	Asn	Pro	Asn	Ser	Thr	Leu	Lys	Pro	Phe	Glu
1863																	1890
AAA	ATC	A ^{AA}	C ^{AA}	T ^A T	G ^A T	A ^A A	C ^{AA}	A ^{AC}	AGC	ACC	CTA	A ^{AA}	CCC	TTT	GAG		
Lys	Ile	Lys	Gln	Ser	Leu	Gly	Gln	Glu	Lys	Tyr	Asn	Lys	Ile	Asp	Glu	Leu	Gly
1917																	1944



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APPROVED	O.G. FIG.
BY	CLASS
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FIG.5G

TTC	AAA	GCT	"AT	AAA	GAT	TTA	CGC	AAC	GAA	TGG	GGT	TGG	ACT	AAT	GAC	AAC	1998
Phe	Lys	Ala	Tyr	Lys	Asp	Leu	Arg	Asn	Glu	Trp	Ala	Gly	Trp	Thr	Asn	Asp	Asn
AGC	CAA	CAA	AAT	GCC	AAT	AAA	GGC	ACG	GAT	AAT	ATC	TAT	CAG	CCA	AAT	CAA	2052
Ser	Gln	Gln	Asn	Ala	Asn	Lys	Gly	Thr	Asp	Asn	Ile	Tyr	Gln	Pro	Asn	Gln	Ala
ACT	GTC	AAA	GAT	GAC	AAA	TGT	AAA	TAT	AGC	GAG	ACC	AAC	AGC	TAT	GCT	GAT	2106
Thr	Val	Val	Lys	Asp	Asp	Lys	Cys	Lys	Tyr	Ser	Glu	Thr	Asn	Ser	Tyr	Ala	Asp
TGC	TCA	ACC	ACT	CGC	CAC	ATC	AGT	GGT	GAT	AAT	TAT	TTC	ATC	GCT	TTA	AAA	2160
Cys	Ser	Thr	Thr	Arg	His	Ile	Ser	Gly	Asp	Asn	Tyr	Phe	Ile	Ala	Leu	Lys	Asp
AAC	ATG	ACC	ATC	AAT	AAA	TAT	GTT	GAT	TTG	GGG	CTG	GGT	GCT	CGC	TAT	GAC	2214
Asn	MET	Thr	Ile	Asn	Lys	Tyr	Val	Asp	Leu	Gly	Leu	Gly	Ala	Arg	Tyr	Asp	Arg
ATC	AAA	CAC	AAA	TCT	GAT	GTG	CCT	TTG	GTA	GAC	AAC	AGT	GCC	AGC	AAC	CAG	2268
Ile	Lys	His	Lys	Ser	Asp	Val	Pro	Leu	Val	Asp	Asn	Ser	Ala	Ser	Asn	Gln	Leu
2025	2079	2133	2187	2241													

APPROVED	O. G. FIG.
BY	CLASS SUBCLASS
BRADFORD	

FIG. 5H

TCT	TGG	AAT	TTT	GGC	GTC	GTC	AAG	CCC	ACC	AAT	TGG	CTG	GAC	ATC	GCT	TAT	2295
Ser	Trp	Asn	Phe	Gly	Val	Val	Lys	Pro	Thr	Asn	Trp	Leu	Asp	Ile	Ala	Tyr	2322
AGA	AGC	TCG	CAA	GGC	TTT	CGC	ATG	CCA	AGT	TTT	TCT	GAA	ATG	TAT	GGC	GAA	2376
Arg	Ser	Ser	Gln	Gly	Phe	Arg	MET	Pro	Ser	Phe	Ser	Glu	MET	Tyr	Gly	Glu	Arg
TTT	GGC	GTA	ACC	ATC	GGT	AAA	GGC	ACG	CAA	CAT	GGC	TGT	AAG	GGT	CTT	TAT	2403
Phe	Gly	Val	Thr	Ile	Gly	Lys	Gly	Thr	Gln	His	Gly	Cys	Lys	Gly	Leu	Tyr	2430
ATT	TGT	CAG	CAG	ACT	GTC	CAT	CAA	ACC	AAG	CTA	AAA	CCT	GAA	AAA	TCC	TTT	2457
Ile	Cys	Gln	Gln	Thr	Val	His	Gln	Thr	Lys	Leu	Lys	Pro	Glu	Lys	Ser	Phe	2484
CAA	GAA	ATC	GGA	GCG	ACT	TTA	CAT	AAC	CAC	TTA	GGC	AGT	CTT	GAG	GTT	AGT	2511
Gln	Glu	Ile	Gly	Ala	Thr	Ileu	His	Asn	His	Leu	Gly	Ser	Leu	Glu	Val	Ser	2538
TTT	AAA	AAT	CGC	TAT	ACC	GAT	TTG	ATT	GGT	AAA	AGT	GAA	GAG	ATT	AGA	ACC	2565
Phe	Lys	Asn	Arg	Tyr	Thr	Asp	Leu	Ile	Val	Gly	Lys	Ser	Glu	Ile	Arg	Thr	2592
CTA	ACC	CAA	GGT	GAT	AAT	GCA	GGC	AAA	CAG	CGT	AAA	GGT	GAT	TTG	GGC	TTT	2619
Leu	Thr	Gln	Gly	Asp	Asn	Ala	Gly	Lys	Gln	Arg	Gly	Lys	Gly	Asp	Leu	Gly	2646

FIG. 5I

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
BRAFTHAM	

CAT	AAT	GGA	CAA	GAT	GCT	GAT	TTG	ACA	GGC	ATT	AAC	ATT	CTT	GGC	AGA	CTT	GAC	2700
His	Asn	Gly	Gln	Asp	Ala	Asp	Leu	Thr	Gly	Ile	Asn	Ile	Leu	Gly	Arg	Leu	Asp	
CTA	AAC	GCT	GTC	AAT	AGT	CGC	CTT	CCC	TAT	GGA	TTA	TAC	TCA	ACA	CTG	GCT	TAT	2754
Leu	Asn	Ala	Val	Asn	Ser	Arg	Leu	Pro	Tyr	Gly	Leu	Tyr	Ser	Thr	Leu	Ala	Tyr	
AAC	AAA	GTT	GAT	GTT	AAA	GGA	AAA	ACC	TTA	AAC	CCA	ACT	TTG	GCA	GGA	ACA	AAC	2808
Asn	Lys	Val	Asp	Val	Lys	Gly	Lys	Thr	Leu	Asn	Pro	Thr	Leu	Ala	Gly	Thr	Asn	
ATA	CTG	TTT	GAT	GCC	ATC	CAG	CCA	TCT	CGT	TAT	GTG	GGG	CTT	GGC	TAT	GAT	2862	
Ile	Leu	Phe	Asp	Ala	Ile	Gln	Pro	Ser	Arg	Tyr	Val	Val	Gly	Leu	Gly	Tyr	Asp	
GCC	CCA	AGC	CAA	AAA	TGG	GGA	GCA	AAC	GCC	ATA	TTT	ACC	CAT	TCT	GAT	GCC	AAA	2916
Ala	Pro	Ser	Gln	Lys	Trp	Gly	Ala	Asn	Ala	Ile	Phe	Thr	His	Ser	Asp	Ala	Lys	
AAT	CCA	GAG	GAG	CTT	TTG	GCA	GAT	AAG	AAC	TTA	GGT	AAT	GGC	AGC	ATT	CAA	ACA	2970
Asn	Pro	Ser	Glu	Leu	Leu	Ala	Asp	Lys	Asn	Leu	Gly	Asn	Ile	Gln	Thr			
2673																		
2727																		
2781																		
2835																		
2889																		
2943																		

FIG. 5J

APPROVED	O.G.: FIG.	
BY	CLASS	SUBCLASS
		DRAFTSMAN

AAA	CAA	GCC	ACC	AAA	GCA	AAA	TCC	ACG	CCG	TGG	CAA	ACA	CTT	GAT	TTG	TCA	GGT	3024
Lys	Gln	Ala	Thr	Lys	Ala	Lys	Ser	Thr	Pro	Trp	Gln	Thr	Leu	Asp	Leu	Ser	Gly	
TAT	GTA	AAC	ATA	AAA	GAT	AAT	TTT	ACC	TTG	CGT	GCT	GGC	GTG	TAC	AAT	GTA	TTT	3078
Tyr	Val	Asn	Ile	Lys	Asp	Asn	Phe	Thr	Leu	Arg	Ala	Gly	Val	Tyr	Asn	Val	Phe	
AAT	ACC	TAT	TAC	ACC	ACT	TGG	GAG	GCT	TTA	CGC	CAA	ACA	GCA	GAA	GGG	GCG	GTC	3132
Asn	Thr	Tyr	Tyr	Thr	Thr	Trp	Glu	Ala	Leu	Arg	Gln	Thr	Ala	Glu	Gly	Ala	Val	
AAT	CAG	CAT	ACA	GGA	CTG	AGC	CAA	GAT	AAG	CAT	TAT	GGT	CGC	TAT	GCC	GCT	CCT	3186
Asn	Gln	His	Thr	Gly	Leu	Ser	Gln	Asp	Lys	His	Tyr	Gly	Arg	Tyr	Ala	Ala	Pro	
GGA	CGC	AAT	TAC	CAA	TTG	GCA	CTT	GAA	ATG	AAG	TTT	TAA						
Gly	Arg	Asn	Tyr	Gln	Leu	Ala	Leu	Glu	MET	Lys	Phe							

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

FIG.6A

Sequence of *M. catarrhalis* 4223 *tbpB* gene

GTAAATTGCCGTATTTGCTTATCATAATGCATTATCAAATGCTCAAATAATAGCCAAATGCACAT
 TGTCAAGCATGCCAAATAAGGCATCAACAGACTTTAGATAATTACCATCAACCCATCAGAGGATTATT

ATG	<u>AAA</u>	CAC	<u>ATT</u>	CCT	<u>TTA</u>	ACC	ACA	<u>CTG</u>	TGT	<u>GTC</u>	GCA	ATC	<u>TCT</u>	GCC	<u>GTC</u>	TTA	<u>TTA</u>	
MET	Lys	His	Ile	Pro	Leu	Thr	Thr	Thr	Leu	Cys	Val	Ala	Ile	Ser	Ala	Val	Leu	Leu
ACC	<u>GCT</u>	TGT	GGT	GGC	AGT	GGT	TCA	AAT	CCA	CCT	GCT	CCT	ACG	CCC	ATT	CCA		
Thr	Ala	Cys	Gly	Gly	Ser	Gly	Gly	Ser	Asn	Pro	Pro	Pro	Ala	Pro	Thr	Pro	Ile	Pro
AAT	GCT	AGC	GGT	TCA	GGT	AAT	ACT	GGC	AAC	ACT	GGT	AAT	GCT	GGC	GGT	ACT	GAT	
Asn	Ala	Ser	Gly	Ser	Gly	Asn	Thr	Gly	Asn	Thr	Gly	Asn	Ala	Gly	Gly	Thr	Asp	
AAT	ACA	GCC	AAT	GCA	GGT	AAT	ACA	GGC	GGT	ACA	AAC	TCT	GGT	ACA	GGC	AGT		216
Asn	Thr	Ala	Asn	Ala	Gly	Asn	Thr	Gly	Gly	Thr	Gly	Asn	Ser	Gly	Thr	Gly	Ser	Ala
AAC	ACA	CCA	GAG	CCA	AAA	TAT	CAA	GAT	GTA	CCA	ACT	GAG	AAA	AAT	GAA	AAA	GAT	270
Asn	Thr	Pro	Glu	Pro	Lys	Tyr	Gln	Asp	Val	Pro	Thr	Glu	Lys	Asn	Glu	Lys	Asp	

APPROVED	O.G. FIG.	CLASS	SUBCLASS
BY			
CRAFTSMAN			

FIG.6B

AAA	GTT	TCA	TCC	ATT	CAA	GAA	CCT	GCC	ATG	GGT	TAT	GGC	ATG	TG	AGT	TTG	AGT	AAA	324
Lys	Val	Ser	Ser	Ile	Gln	Glu	Pro	Ala	MET	Gly	Tyr	Gly	MET	Ala	Leu	Ser	Lys		
ATT	AAT	CTA	CAC	AAC	CGA	CAA	GAC	ACG	CCA	TTA	GAT	GAA	AAA	AAT	ATC	ATT	ACC		378
Ile	Asn	Leu	His	Asn	Arg	Gln	Asp	Thr	Pro	Leu	Asp	Glu	Lys	Asn	Ile	Ile	Thr		
TTA	GAC	GGT	AAA	AAA	CAA	GTT	GCA	GAA	GGT	AAA	AAA	TCG	CCA	TG	CCA	TTT	TCG		432
Leu	Asp	Gly	Lys	Lys	Gln	Val	Ala	Glu	Gly	Lys	Lys	Ser	Pro	Leu	Pro	Phe	Ser		
TTA	GAT	GTA	GAA	AAT	AAA	TTG	CTT	GAT	GGC	TAT	ATA	GCA	AAA	ATG	AAT	GTA	GCG		486
Leu	Asp	Val	Glu	Asn	Lys	Leu	Leu	Asp	Gly	Tyr	Ile	Ala	Lys	MET	Asn	Val	Ala		
GAT	AAA	AAT	GCC	ATT	GGT	GAC	AGA	ATT	AAG	AAA	GGT	AAT	AAA	GAA	ATC	TCC	GAT		540
Asp	Lys	Asn	Ala	Ile	Gly	Asp	Arg	Ile	Lys	Lys	Gly	Asn	Ile	Ser	Val	Asp			
CAA	GAA	CTT	GCC	AAA	CAA	ATC	AAA	GAA	GCT	GTG	CGT	AAA	AGC	CAT	GAG	TTT	CAG		594
Glu	Glu	Leu	Ala	Lys	Gln	Ile	Lys	Glu	Ala	Val	Arg	Lys	Ser	His	Glu	Phe	Gln		

APPROVED.	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG.6C

CAA	GTA	TTA	TCA	TCA	CTG	GAA	AAC	AAA	ATT	TTT	CAT	TCA	AAT	GAC	GGA	ACA	ACC	648
Gln	Val	Leu	Ser	Ser	Leu	Glu	Asn	Lys	Ile	Phe	His	Ser	Asn	Asp	Gly	Thr	Thr	
AAA	GCA	ACC	ACA	CGA	GAT	TTA	AAA	TAT	GTT	GAT	TAT	GGT	TAC	TAC	TTG	GCG	AAT	621
Lys	Ala	Thr	Thr	Arg	Asp	Leu	Lys	Tyr	Val	Asp	Tyr	Gly	Tyr	Tyr	Tyr	Leu	Ala	
GAT	GGC	AAT	TAT	CTA	ACC	GTC	AAA	ACA	GAC	AAA	CTT	TGG	AAT	TTA	GCC	CCT	GTG	756
Asp	Gly	Asn	Tyr	Leu	Thr	Val	Lys	Thr	Asp	Lys	Leu	Trp	Asn	Leu	Gly	Pro	Val	
GGT	GTG	TTG	TAT	AAT	GGC	ACA	ACG	ACC	GCC	AAA	GAG	TTG	CCC	ACA	CAA	GAT	810	
Gly	Gly	Val	Phe	Tyr	Asn	Gly	Thr	Thr	Ala	Lys	Glu	Leu	Pro	Thr	Gln	Asp		
GCG	GTC	AAA	TAT	AAA	GGA	CAT	TGG	GAC	TTT	ATG	ACC	GAT	GTT	GCC	AAC	AGA	AGA	864
Ala	Val	Lys	Tyr	Lys	Gly	His	Trp	Asp	Phe	<u>MET</u>	<u>Thr</u>	<u>Asp</u>	<u>Val</u>	<u>Ala</u>	<u>Asn</u>	<u>Arg</u>	<u>Arg</u>	
AAC	CGA	TTT	AGC	GAA	GTG	AAA	GAA	AAC	TCT	CAA	GCA	GGC	TGG	TAT	TAT	GGA	GCA	918
Asn	Arg	Phe	Ser	Glu	Val	Lys	Glu	Asn	Ser	Gln	Ala	Gly	Trp	Tyr	Tyr	Gly	Ala	

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

FIG.6D

TCT	TCA	AAA	GAT	GAA	TAC	AAC	CGC	TTA	TTA	ACT	AAA	GAA	GAC	TCT	GCC	CCT	GAT	945	972	
Ser	Ser	Lys	Asp	Glu	Tyr	Asn	Arg	Leu	Leu	Thr	Leu	Thr	Lys	Glu	Asp	Ser	Ala	Pro	Asp	
GGT	CAT	AGC	GGT	GAA	TAT	GGC	CAT	AGC	AGT	GAG	TTT	ACT	GTT	AAT	TTT	AAG	GAA	1026		
Gly	His	Ser	Gly	Glu	Tyr	Gly	His	Ser	Ser	Glu	Phe	Thr	Val	Asn	Phe	Lys	Glu			
AAA	AAA	TTA	ACA	GGT	AAG	CTG	TTG	AGT	AAC	CTA	CAA	GAC	CGC	CAT	AAG	GGC	AAT	1080		
Lys	Lys	Leu	Thr	Gly	Lys	Leu	Phe	Ser	Asn	Leu	Gln	Asp	Arg	His	Lys	Gly	Asn			
CTT	ACA	AAA	ACC	GAA	CGC	TAT	GAC	ATC	GAT	GCC	AAT	ATC	CAC	GGC	AAC	CGC	TTC	1134		
Val	Thr	Lys	Thr	Glu	Arg	Tyr	Asp	Ile	Asp	Ala	Asn	Ile	His	Gly	Asn	Arg	Phe			
CGT	GCC	AGT	GCC	ACC	GCA	AGC	AAT	GAC	ACA	AGC	AAA	CAC	CCC	TTT	ACC			1188		
Arg	Gly	Ser	Ala	Thr	Ala	Ser	Asn	Lys	Asn	Asp	Thr	Ser	Lys	His	Pro	Phe	Thr			
AGT	GAT	GCC	AAC	AAT	AGG	CTA	GAA	GGT	GGT	TTT	TAT	GGG	CCA	AAA	GGC	GAG	GAG	1242		
Ser	Asp	Ala	Asn	Asn	Arg	Leu	Glu	Gly	Gly	Gly	Tyr	Gly	Pro	Lys	Gly	Glu	Glu			
																		1215		

APPROVED BY	O.G. FIG. CLASS	SUBCLASS
DRAFISHAN		

FIG.6E

CTG GCA	GGT AAA TTC TTA ACC AAT GAC	1269	1296
Leu Ala	Gly Lys Phe Leu Thr Asn Asp Asn Lys	Leu Phe Gly Val Phe Gly Ala	
AAA CGA	GAG AGT AAA GCT GAG GAA AAA ACC GAA GCC ATC TTA GAT GCC TAT GCA	1323	1350
Lys Arg	Glu Ser Lys Ala Glu Glu Lys Thr Glu Ala Ile Leu Asp Ala Tyr Ala		
CTT CGG	ACA TTT AAT ACA AGT AAC GCA ACC ACA TTC ACC CCA TTT ACC GAA AAA	1377	1404
Leu Gly	Thr Phe Asn Thr Ser Asn Ala Thr Phe Thr Pro Phe Thr Glu Lys		
CAA CTG	GAT AAC TTT GGC AAT GCC AAA AAA TTG GTC TTA GGT TCT ACC GTC ATT	1431	1458
Gln Leu	Asp Asn Phe Gly Asn Ala Lys Lys Leu Val Leu Gly Ser Thr Val Ile		
GAT TTG	CCT ACT GAT GCC ACC AAA AAT GAA TTC ACC AAA GAC AAG CCA GAG	1485	1512
Asp Leu	Val Pro Thr Asp Ala Thr Lys Asn Glu Phe Thr Lys Asp Lys Pro Glu		
TCT GCC	ACA AAC GAA GCG GGC GAG ACT TTG ATG GTG AAT GAT GAA GTT AGC GTC	1539	1566
Ser Ala	Thr Asn Glu Ala Gly Glu Thr Leu MET Val Asn Asp Glu Val Ser Val		

APPROVED	O. G. FIG.
BY	CLASS
DRAFSHAN	SUBCLASS

FIG.6F

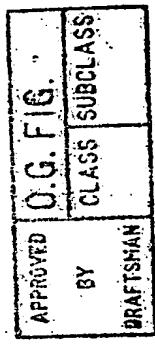
AAA ACC TAT GGC AAA AAC TTT GAA TAC CTA AAA TTT GGT GAG CTT AGT ATC GGT	1593
Lys Thr Tyr Gly Lys Asn Phe Glu Tyr Leu Lys Phe Glu Leu Ser Ile Gly	
GGT AGC CAT AGC GTC TTA CAA GGC GAA CGC ACC GCT ACC ACA GGC GAG AAA	1620
Gly Ser His Ser Val Phe Leu Gln Gly Glu Arg Thr Ala Thr Gly Glu Lys	
GCC GTA CCA ACC ACA GGC ACA GGC AAA TAT TTG GGG AAC TGG GTA GGA TAC ATC	1647
Ala Val Pro Thr Thr Gly Thr Ala Lys Tyr Leu Gly Asn Trp Val Gly Tyr Ile	
GCC GTA CCA ACC ACA GGC ACA GGC AAA TAT TTG GGG AAC TGG GTA GGA TAC ATC	1701
Ala Val Pro Thr Thr Gly Thr Ala Lys Tyr Leu Gly Asn Trp Val Gly Tyr Ile	
ACA GGA AAG GAC ACA GGA ACG GGC ACA GGA AAA AGC TTT ACC GAT GCC CAA GAT	1728
Thr Gly Lys Asp Thr Gly Thr Gly Thr Gly Lys Ser Phe Thr Asp Ala Gln Asp	
ACA GGA AAG GAC ACA GGA ACG GGC ACA GGA AAA AGC TTT ACC GAT GCC CAA GAT	1755
Thr Gly Lys Asp Thr Gly Thr Gly Thr Gly Lys Ser Phe Thr Asp Ala Gln Asp	
GTT GCT GAT TTT GAC ATT GAT TTT GGA AAT AAA TCA GTC ACC GGT AAA CTT ATC	1809
Val Ala Asp Phe Asp Ile Asp Phe Gly Asn Lys Ser Val Ser Gly Lys Leu Ile	
ACC AAA GGC CGC CAA GAC CCT GTC TTT AGC ATC ACA GGT CAA ATC GCA GGC AAT	1836
Thr Lys Gly Arg Gln Asp Pro Val Phe Ser Ile Thr Gly Gln Ile Ala Gly Asn	
ACC AAA GGC CGC CAA GAC CCT GTC TTT AGC ATC ACA GGT CAA ATC GCA GGC AAT	1863
Thr Lys Gly Arg Gln Asp Pro Val Phe Ser Ile Thr Gly Gln Ile Ala Gly Asn	

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APPROVED	O. G. FIG.
BY	CLASS SUBCLASS
GRAFTSMAN	

FIG.6G

GGC TGG	ACA	GGG	ACA	GCC	AGC	ACC	AAA	GCG	GAC	GCA	GGA	GGC	TAC	AAG	ATA	1944
Gly Trp	Thr	Gly	Thr	Ala	Ser	Thr	Thr	Lys	Ala	Asp	Ala	Gly	Gly	Tyr	Lys	Ile
GAT TCT	AGC	AGT	ACA	GGC	AAA	TCC	ATC	GCC	ATC	AAA	GAT	GCC	AAT	GTT	ACA	1998
Asp Ser	Ser	Ser	Thr	Gly	Lys	Ser	Ile	Ala	Ile	Lys	Asp	Ala	Asn	Val	Thr	Gly
GGC TTT	TAT	GGT	CCA	AAT	GCA	AAC	GAG	ATG	GGC	GGG	TCA	TTT	ACA	CAC	AAC	2052
Gly Phe	Tyr	GLY	Pro	Asn	Ala	Asn	Glu	MET	Gly	Gly	Ser	Phe	Thr	His	Asn	Ala
GAT GAC	AGC	AAA	GCC	TCT	GTG	GTC	TTT	GGC	ACA	AAA	AGA	CAA	GAA	GTT	AAG	2106
Asp Asp	Ser	Lys	Ala	Ser	Val	Val	Phe	Gly	Thr	Lys	Arg	Gln	Glu	Val	Lys	
2079																



Q8 genome and subclones

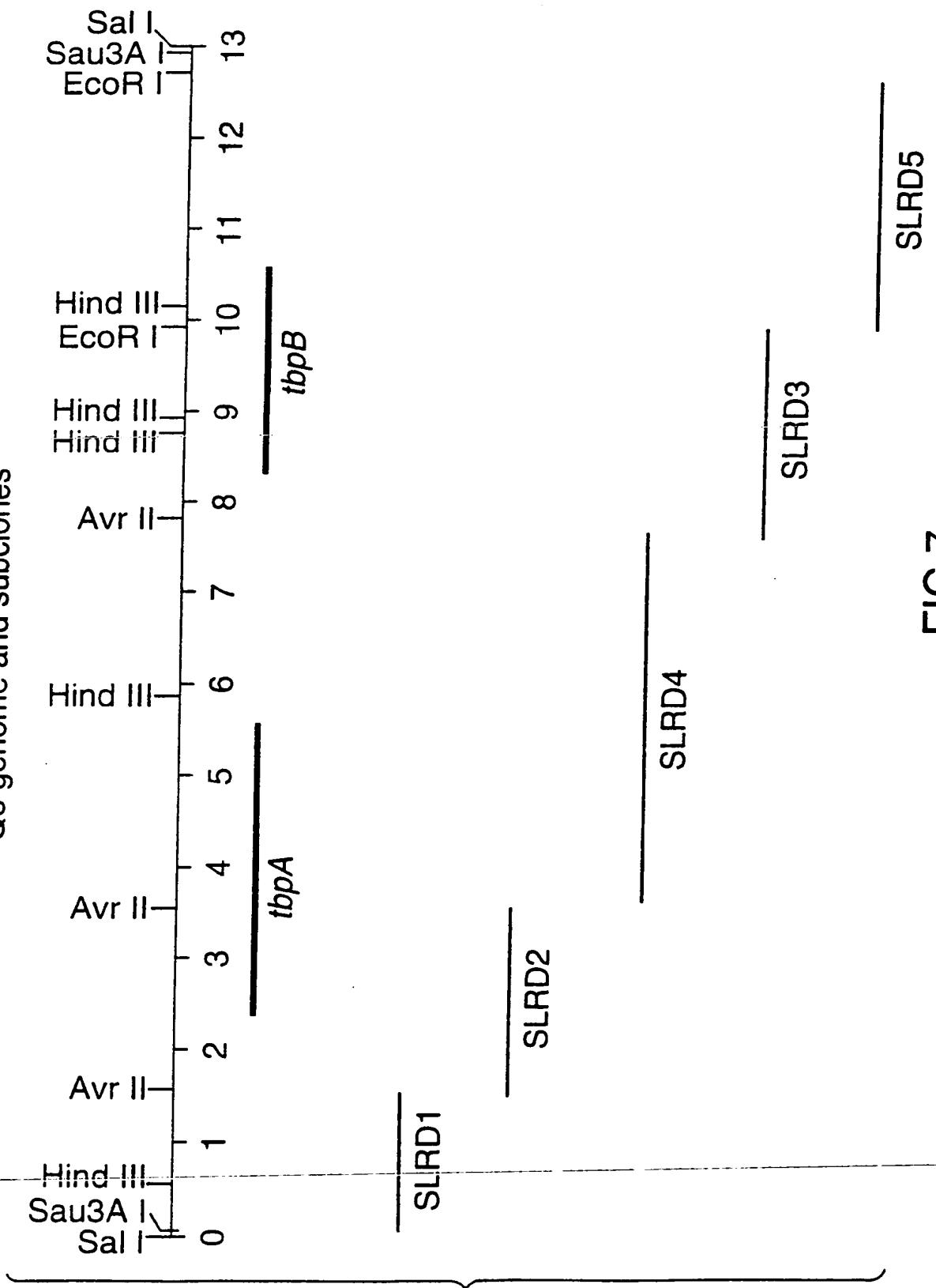


FIG. 7

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APPROVED	O.G. FIG.
BY	CLASS
GRAFTSMAN	SUBCLASS

Chart of Q8_TBPA - Linear, length 3660

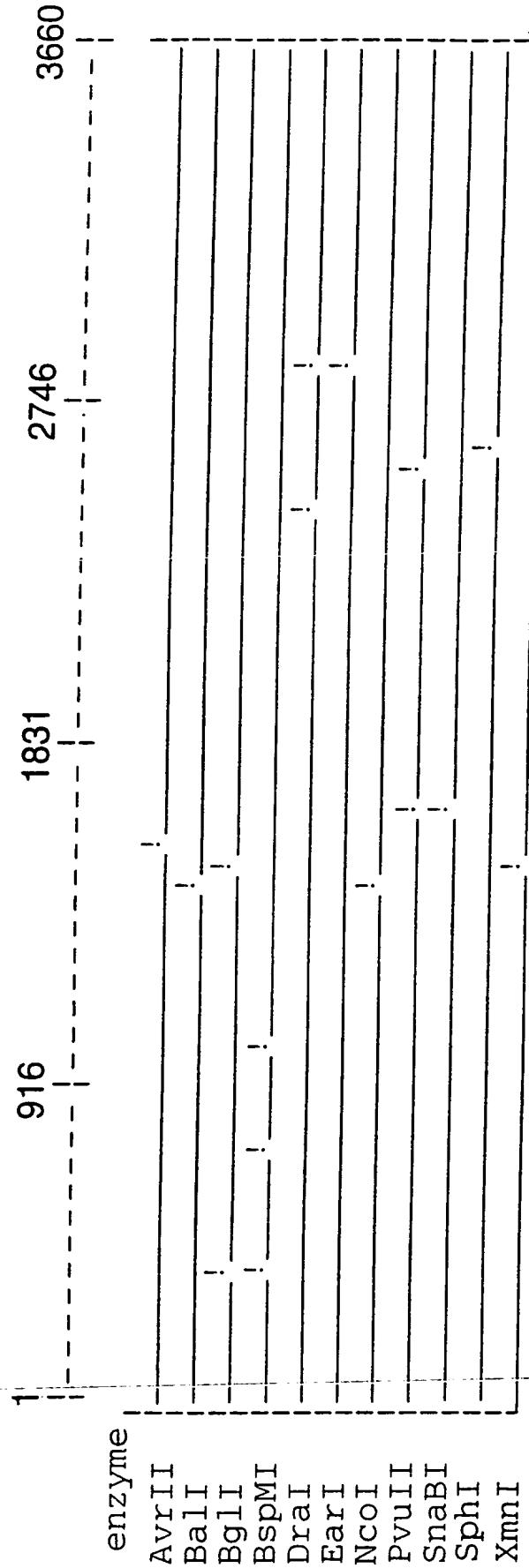


FIG.8

APPROVED BY	O.G. FIG.
DRAFFSMAN	CLASS
	SUBCLASS

Chart of Q8_TBPPB_SLRD3_SLRD5 - Linear, length 3487

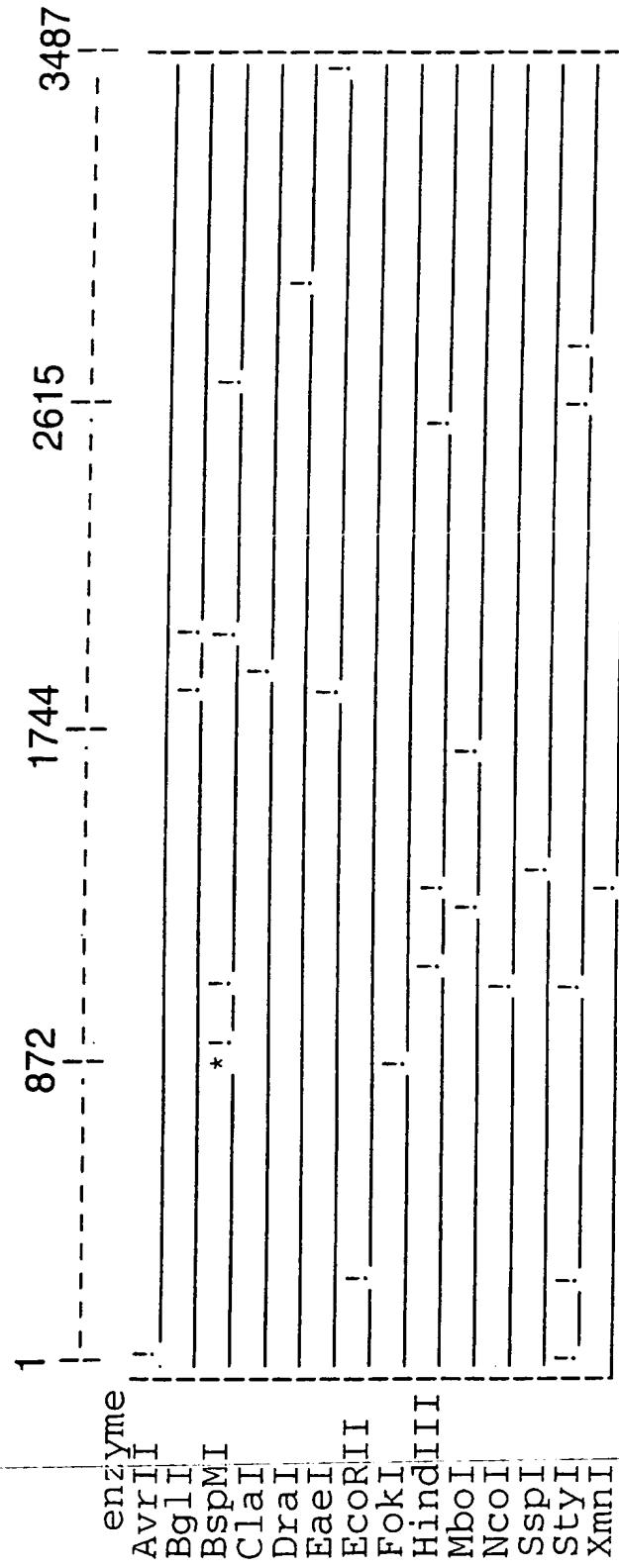


FIG.9

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10A

Q8 tbpA gene sequence

AATTGATAACAAATGGTTGTATTACACT
10 30
 TGTTATTGTAATTAAATTACATTTT
 40 60
ACAACTATAACAAATCAAATAATTAAAT
70 80 90
 CACTTTGGTTGGTTAGCAAGCAAA
 100 110 120
TGGTTATTGTTGTTAACAAATTAAAGTTCTTA
130 140 150
 AAACCGATACACGCCATAAACAGATGGTT
 160 170 180
TTTGGCATCTTCAATTGATGCCCTTGT
190 200 210
 TGATTTGGTTGGTCATTGATGATC
 220 230 240
AGTACAAAGCCAACAGGTGGTCATTGATG
250 260 270
 MET

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Approved	0.6, FIG.
By	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10B

SUBSTITUTE SHEET (RULE 26)

ASN	GLN	SER	LYS	SER	LYS	SER	LYS	SER	LYS
A A T C A A T C C A A A A A T C C A A A A T C C A A A									
280	290	300							
GLN	VAL	LEU	LYS	LEU	SER	ALA	LEU	SER	LEU
C A A G T A T T A A A A C T T A G T G C C T T G T C T T G									
310	320	330							
GLY	LEU	LEU	ASN	ILE	THR	GLN	VAL	ALA	LEU
G G T C T G C T T A A C A T C A C G C A G G T G G C A C T G									
340	350	360							
ALA	ASN	THR	THR	ALA	ASP	LYS	ALA	GLU	ALA
G C A A C A C A A C G G C C G A T A A G G C G G A G G C A									
370	380	390							
THR	ASP	LYS	THR	ASN	LEU	VAL	VAL	VAL	LEU
A C A G A T A A G A C A A A C C T T G T T G T C T T G									
400	410	420							
ASP	GLU	THR	VAL	VAL	THR	ALA	LYS	LYS	ASN
G A T G A A A C T G T T G T A A C A G C G A A G A A A A C									
430	440	450							
ALA	ARG	LYS	ALA	ASN	GLU	VAL	THR	GLY	LEU
G C C C G T A A A G C C A A C G A A G T T A C A G G G C T T									
460	470	480							

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APPROVED	O.Q.	FIG.
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 10C

GLY LYS VAL LYS THR ALA GLU THR ILE
 G G T A A G G T G G T C A A A A C T G C C G A G A C C A T C 500
 490

ASN LYS GLU GLN VAL LEU ASN ILE ARG ASP
 A A T A A A G A A C A A G T G C T A A A C A T T C G A G A C 540
 520

LEU THR ARG TYR ASP PRO GLY ILE ALA VAL
 T T A A C A C G C T A T G A C C C T G G C A T T G C T G T G 560
 550

VAL GLU GLN GLY ARG GLY ALA SER SER GLY
 G T T G A G C A A G G T C G T G G G C A A G C T C A G G C 590
 580

TYR SER ILE ARG GLY MET ASP LYS ASN ARG
 T A T T C T A T T C G T G G T A T G G A T A A A A T C G T 630
 620

VAL ALA VAL LEU VAL ASP GLY ILE ASN GLN
 G T G G C G G T A T T G G T G A T G G C A T C A A T C A A 660
 640

ALA GLN HIS TYR ALA LEU GLN GLY PRO VAL
 G C C C A G C A C T A T G C C C T A C A A G G C C C T G T G 690
 680

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FIG. 10D

APPROVED	O.G.FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

ALA GLY LYS ASN TYR ALA ALA GLY GLY ALA
 G C A G G C A A A A T T A T G C C C G C A G G T G G G C A
 720
 710

ILE ASN GLU ILE GLU TYR GLU ASN VAL ARG
 A T C A A C G A A T A G A A T A C G A A A A T G T C C G C
 750
 740

SER VAL GLU ILE SER LYS GLY ALA ASN SER
 T C C G T T G A G A T T A G T A A A A G G T G C A A A T T C A
 780
 770

SER GLU TYR GLY SER GLY ALA LEU SER GLY
 A G T G A A T A C G G C T C T G G G G C A T T A T C T G G C
 810
 800

SER VAL ALA PHE VAL THR LYS THR ALA ASP
 T C T G T G G C A T T T G T T A C C A A A A C C G C C G A T
 840
 830

ASP ILE ILE LYS ASP GLY LYS ASP TRP GLY
 G A C A T C A T C A A A G A T G G T A A A G A T T G G G C
 870
 860

VAL GIN THR LYS THR ALA TYR ALA SER LYS
 G T G C C A G A C C A A A A C C G C C T A T G C C A G T A A A
 900
 880

APPROVED	O.G. FIG.
BY	CLASS
DRAFSMAN	SUBCLASS

FIG.10E

ASN ASN ALA TRP VAL ASN SER VAL ALA ALA
 A A T A A C G C A T G G G T T A A T T C T G T G G C A G C A
 910 920 930
 ALA GLY LYS ALA GLY SER PHE SER GLY LEU
 G C A G G C A A G G C A G G T T C T T A G C G G T C T T
 940 950 960
 ILE ILE TYR THR ASP ARG ARG GLY GLN GLU
 A T C A T C T A C A C C G A C C G C C G T G G T C A A G A A
 970 980 990
 TYR LYS ALA HIS ASP ASP ALA TYR GLN GLY
 T A C A A G G C A C A T G A T G C C T A T C A G G T
 1000 1010 1020
 SER GLN SER PHE ASP ARG ALA VAL ALA THR
 A G C C A A A G T T T G A T A G A G C G G T G G C A A C C
 1030 1040 1050
 THR ASP PRO ASN ASN PRO LYS PHE LEU ILE
 A C T G A C C C A A T A A C C C A A T T T A A T A
 1060 1070 1080
 ALA ASN GLU CYS ALA ASN GLY ASN TYR GLU
 G C A A A T G A A T G T G C C A A T G G T A A T T A T G A G
 1090 1100 1110

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10F

GLN ALA CYS AIA AIA GLY GLY GIN THR LYS LEU
 G C G T G T G C T G C T G G C G G T C A A C C A A C T C
 1130 1140

GLN ALA LYS PRO THR ASN VAL ARG ASP LYS
 C A A G C T A A G C C A A C C A A T G T G C G T G A T A A G
 1150 1160 1170

VAL ASN VAL LYS ASP TYR THR GLY PRO ASN
 G T C A A T G T C A A A G A T T A T A C A G G T C C T A A C
 1180 1190 1200

ARG LEU ILE PRO ASN PRO LEU THR GIN ASP
 C G C C T T A T C C C A A C C C A C T C A C C C A A G A C
 1210 1220 1230

SER LYS SER LEU LEU ARG PRO GLY TYR
 A G C A A A T C C T T A C T G C T T C G C C A G G T T A T
 1240 1250 1260

GLN LEU ASN ASP LYS HIS TYR VAL GLY GLY
 C A G C T A A A C G A T A A G C A C T A T G T C G G T G G T
 1270 1280 1290

VAL TYR GLU ILE THR LYS GLN ASN TYR ALA
 G T G T A T G A A A T C A C C A A A C A A C T A C G C C
 1300 1310 1320

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10G

MET GLN ASP LYS THR VAL PRO ALA TYR LEU
 A T G C A A G A T A A A A C C G T G C C T G C T T A T C T G
 1330 1340

THR VAL HIS ASP ILE GLU LYS SER ARG LEU
 A C G G T T C A T G A C A T T G A A A A T C A A G G C T C
 1360 1370 1380

SER ASN HIS GLY GLN ALA ASN GLY TYR TYR
 A G C A A C C A T G G C C A A G C C A A T G G C T A T T A T
 1390 1400 1410

GLN GLY ASN ASN LEU GLY GLU ARG ILE ARG
 C A A G G C A A T A A C C T T G G T G A A C G C A T T C G T
 1420 1430 1440

ASP ALA ILE GLY ALA ASN SER GLY TYR GLY
 G A T G C C A T T G G C A A A T T C A G G T T A T G G C
 1450 1460 1470

ILE ASN TYR ALA HIS GLY VAL PHE TYR ASP
 A T C A A C T A T G C T C A T G G C G T A T T T A T G A C
 1480 1490 1500

GLU LYS HIS GLN LYS ASP ARG LEU GLY LEU
 G A A A A C A C C A A A A G A C C G C T A G G G C T T
 1510 1520 1530

APPROVED	O.G. FIG.
EY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10H

GLU TYR VAL TYR ASP SER LYS GLY GLU ASN
 G A A T A T G T T A T G A C A G C A A A G G T G A A A T 1560
 1540 1550 1560

LYS TRP PHE ASP ASP VAL ARG VAL SER TYR
 A A A T G G T T G A T G A T G T G C G T G T C T T A T 1570
 1580 1590 1600 1610 1620

ASP LYS GIN ASP ILE THR LEU ARG SER GIN
 G A C A A G C A A G A C A T T A C G C T A C G C C A G 1620

LEU THR ASN THR HIS CYS SER THR TYR PRO
 C T G A C C A A C A C G C A C T G T T C A A C C T A T C C G 1630
 1640 1650 1660 1670 1680

HIS ILE ASP LYS ASN CYS THR PRO ASP VAL
 C A C A T T G A C A A A A T T G T A C G C C T G A T G T C 1680

ASN LYS PRO PHE SER VAL LYS GLU VAL ASP
 A A T A A A C C T T T C G G T A A A G A G G T G A T 1700
 1710 1720 1730 1740

APPROVED BY DRAFTSMAN	O.G. FIG.
	CLASS SUBCLASS

FIG. 10!

ILE LYS ALA VAL PHE ASN LYS MET ALA
 A T C A A A G C C G T C T T A A C A A A A A T G G C A
 1750 1760 1770
 LEU GLY ASN THR HIS HIS ILE ASN LEU
 T T G G G C A A T A C G C A T C A T C A A T C T C G
 1780 1790 1800

GLN VAL GLY TYR ASP LYS PHE ASN SER SER
 C A A G T T G G C T A T G A T A A A T T C A A T C A A G C
 1810 1820 1830
 LEU SER ARG GLU ASP TYR ARG LEU ALA THR
 C T T A G C C C G T G A A G A T T A T C G T T G G C A A C C
 1840 1850 1860

HIS GLN SER TYR GLN LYS LEU ASP TYR THR
 C A T C A A T C T T A T C A A A A A C T T G A T T A C A C C
 1870 1880 1890
 PRO PRO SER ASN PRO LEU PRO ASP LYS PHE
 C C A C C A A G T A A C C C T T G C C A G A T A A G T T T
 1900 1910 1920

LYS PRO ILE LEU GLY SER ASN ASN ARG PRO
 A A G C C C A T T T A G G T T C A A A C A A C A G A C C C
 1930 1940 1950

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10J

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ILE	CYS	LEU	ASP	ALA	TYR	GLY	TYR	GLY	HIS
A T T T G C C C T G A T G C T T A T G G T T A T G G T C A T									
1980									
ASP	HIS	PRO	GLN	ALA	CYS	ASN	ALA	LYS	ASN
G A C C A T C C A C A G G C T T G T A A C G C C A A A A C									
1990									
SER	MIR	TYR	GLN	ASN	PHE	ALA	IIE	LYS	LYS
A G C A C T T A T C A A A A C T T G C C A T C A A A A A A A									
2010									
SER	MIR	TYR	GLN	ASN	PHE	ALA	IIE	LYS	LYS
A G C A C T T A T C A A A A C T T G C C A T C A A A A A A A									
2020									
GLY	ILE	GLU	GLN	TYR	ASN	GLN	ASN	THR	
G G C A T A G A G C A A T A C A C C A A A C C A A T A C C									
2050									
ASP	LYS	ILE	ASP	TYR	GLN	ALA	VAL	IIE	ASP
G A T A A G A T T G A T T A T C A A G C C G T C A T T G A C									
2060									
ASP	LYS	ILE	ASP	TYR	GLN	ALA	VAL	IIE	ASP
G A T A A G A T T G A T T A T C A A G C C G T C A T T G A C									
2070									
ASP	LYS	ILE	ASP	TYR	GLN	ALA	VAL	IIE	ASP
G A T A A G A T T G A T T A T C A A G C C G T C A T T G A C									
2080									
GLN	TYR	ASP	LYS	GLN	ASN	PRO	ASN	SER	THR
C A A T A T G A T A A C A A A C C C C A A C A G C A C C									
2110									
LEU	LYS	PRO	PHE	GLU	LYS	IIE	LYS	GLN	SER
C T A A A C C C T T G A G A A A T C A A A C A A A G T									
2120									
LEU	LYS	PRO	PHE	GLU	LYS	IIE	LYS	GLN	SER
C T A A A C C C T T G A G A A A T C A A A C A A A G T									
2130									
LEU	LYS	PRO	PHE	GLU	LYS	IIE	LYS	GLN	SER
C T A A A C C C T T G A G A A A T C A A A C A A A G T									
2140									
LEU	LYS	PRO	PHE	GLU	LYS	IIE	LYS	GLN	SER
C T A A A C C C T T G A G A A A T C A A A C A A A G T									
2150									
LEU	LYS	PRO	PHE	GLU	LYS	IIE	LYS	GLN	SER
C T A A A C C C T T G A G A A A T C A A A C A A A G T									
2160									

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
		DRAFTSMAN

FIG. 10K

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APPROVED	O. G. FIG.	CLASS	SUBCLASS
	BY		
		DRAFTSMAN	

FIG. 10L

SUBSTITUTE SHEET (RULE 26)

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APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
	DRAFTSMAN	

FIG. 10M

SER	SER	GLN	GLY	PHE	ARG	MET	PRO	SER	PHE
A G C T C	G C A A G G C T T T C G C A T G C C A A G T T T								
2590	2600	2610	2620	2630	2640				
SER	GLU	MET	TYR	GLY	GLU	ARG	PHE	GLY	VAL
T C T G A A A T G T A T G G C G A A C G C T T T G G C G T A									
2650	2660	2670	2680	2690	2700				
THR	ILE	GLY	LYS	GLY	THR	GLN	HIS	GLY	CYS
A C C A T C	G G T A A A G G C A C G C A A C A T G G C T G T								
2650	2660	2670	2680	2690	2700				
LYS	GLY	LEU	TYR	TYR	ILE	CYS	GLN	GIN	THR
A A G G G T C T T A T T A C A T T T G T C A G C A G A C T									
2650	2660	2670	2680	2690	2700				
VAL	HIS	GLN	THR	LYS	LEU	LYS	PRO	GLU	LYS
G T C C A T C A A A C C A A G C T A A A A C C T G A A A A A									
2710	2720	2730	2740	2750	2760				
SER	PHE	ASN	GLN	GLU	ILE	GLY	ALA	THR	LEU
T C C T T T A A C C A A G A A A T C G G A G C G A C T T T A									
2710	2720	2730	2740	2750	2760				
HIS	ASN	HIS	LEU	GLY	SER	LEU	GLU	VAL	SER
C A T A A C C A C T T A G G C A G T C T T G A G G T T A G T									
2770	2780	2790	2800	2810	2820				

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG.1ON

TYR PHE LYS ASN ARG TYR THR ASP LEU ILE
 T A T T T T A A A A T C G C T A T A C C G A T T G A T T
 2820

VAL GLY LYS SER GLU GLU ILE ARG THR LEU
 G T T G G T A A A G T G A A G A G A T T A G A A C C C T A
 2830

THR GLN GLY ASP ASN ALA GLY LYS GLN ARG
 A C C C A A G G T G A T A A T G C A G G C A A A C A G C G T
 2850

GLY LYS GLY ASP LEU GLY PHE HIS ASN GLY
 G G T A A A G G T G A T T G G G C T T C A T A A T G G G
 2870

GLN ASP ALA ASP LEU THR GLY ILE ASN ILE
 C A A G A T G C T G A T T G A C A G G C A T T A A C A T T
 2890

LEU GLY ARG LEU ASP LEU ASN ALA VAL ASN
 C T T G G C A G A C T T G A C C T A A A C G C T G T C A A T
 2910

SER ARG LEU PRO TYR GLY LEU TYR SER THR
 A G T C G C C T T C C C T A T G G A T T A T A C T C A A C A
 2930

2950

2970

2990

3000

2840 2860 2880 2900 2920 2940

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APPROVED BY DRAFTSMAN	O. G. FIG. CLASS SUBCLASS
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FIG. 100

LEU ALA TYR ASN LYS VAL ASP VAL LYS GLY
 C T G G C T T A T A C A A A G T T G A T G T T A A A G G A
 3010 3030

LYS THR LEU ASN PRO THR LEU ALA GLY THR
 A A A C C T T A A A C C A A C T T T G G C A G G A A C A
 3040 3050 3060

ASN ILE ILE PHE ASP ALA ILE GLN PRO SER
 A A C A T A C T G T T G A T G C C A T T C A G C C A T C T
 3070 3090

ARG TYR VAL VAL GLY LEU GLY TYR ASP ALA
 C G T T A T G T G G T G G G C T T G G C T A T G A T G C C
 3100 3110 3120

PRO SER GLN LYS TRP GLY ALA ASN ALA ILE
 C C A A G C C A A A A T G G G G A G C A A C G C C A T A
 3130 3150

PHE THR HIS SER ASP ALA LYS ASN PRO SER
 T T T A C C C A T T C T G A T G C C A A A A T C C A A G C
 3160 3170 3180

GLU LEU LEU ALA ASP LYS ASN LEU GLY ASN
 G A G C T T T G G C A G A T A A G A A C T T A G G T A A T
 3190 3200 3210

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 10P

GLY	ASN	ILE	GLN	THR	LYS	GLN	ALA	THR	LYS
G G C A A C A T T C A A A C A A A C A A G C C A C C A A A									
3220	3230	3240							
ALA	LYS	SER	THR	PRO	TRP	GLN	THR	LEU	ASP
G C A A A T C C A C G C C G T G G C A A C A C T T G A T									
3250	3260	3270							
LEU	SER	GLY	TYR	VAL	ASN	ILE	LYS	ASP	ASN
T T G T C A G G T T A T G T A A C A T A A A G A T A A T									
3280	3290	3300							
PHE	THR	LEU	ARG	ALA	GLY	VAL	TYR	ASN	VAL
T T T A C C T T G C G T G C T G G C G T A C A A T G T A									
3310	3320	3330							
PHE	ASN	THR	TYR	TYR	THR	THR	TRP	GLU	ALA
T T T A A T A C C T A T T A C A C C A C T T G G G A G G C T									
3340	3350	3360							
LEU	ARG	GIN	THR	ALA	GLU	GLY	ALA	VAL	ASN
T T A C G C C A A A C A G C A G A G G G G G G T C A A T									
3370	3380	3390							
GLN	HIS	THR	GLY	LEU	SER	GLN	ASP	LYS	HIS
C A G C A T A C A G G A C T G A G C C A A G A T A A G C A T									
3400	3410	3420							

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APPROVED	O. G. FIG.
BY	CLASS
	SUBCLASS
	DRAFTSMAN

FIG. 10Q

TYR GLY	ARG TYR	ALA ALA PRO	GLY ARG ASN	
T A T G G T C G C T A T G C C G C T C C T G G A C G C A A T				
3430	3440	3450	3460	3470
	TYR GIN LEU ALA LEU GLU MET LYS PHE ***			
	T A C C A A T T G G C A C T T G A A A T G A A G T T T T A A			
	S			
3480				
CCCAGTGGCTTTGATGTAATGCCAAATC				
3490	3500	3510		
	CCAAATCAACCAAATGAAATAAGCCCCATCT			
	3520	3530	3540	
ACCATGAGGGCTTATTATCACATCGCTGA				
3550	3560	3570		
	G T A T G C T C T T A G C G G T C A T C A C T C A G A T T A			
	3580	3590	3600	
GTCATTAATTAGCGGATTAATTATA				
3610	3620	3630	3640	3650
	G T A A T C A C G G C T G C T C T T G A T G A T T T A A G			
	3660			

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 11A

Q8 tlpB Sequence.

C C T A G G G C T G A C A G T A A C A A C A C T T T A T A C
10
30
A G C A C A T C A T T G A T T T A T T A C C C A A T G C C
40
50
A C A C G C T A T T A T C T T T G G G G C A G A C T T T
60
70
80
90
T A T G A T G A A A A A G T G C C A C A A G A C C C A T C T
100
110
120
G A C A G C T A T G A G C G T C G G C A T A C G C A C A
130
140
150
G C T T G G G G C A A G A A T G G G C G G G T C T T
160
170
180
T C A A G G C G T G C C A A A T C A G C A T C A A C A A A
190
200
210
C G C C A T T A C C A A G G C A A A C C C T A A C C A G C
220
230
240
G G T G G A C A A A T T C G C C A G G A T A A A C A G A T G
250
260
270
C A A G G C G T C T T A T C G C T T T G G C A C A G A G A C
280
290
300

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG.1B

ATTCAACAAATGGGCCATCACGGCCACGGCTG
 310
 320
 ACCATCAGGCCAACATCAAATAAAGCCAAAT
 330
 340
 GACATTCAAGGCCAATTATCACAAATCAA
 350
 360
 ATGTTTGTGAGTTAGTGCATTTTGA
 370
 380
 TGGGATAAGCATGCCCTACTTTGTTTT
 390
 400
 GTAAAAAAATGTTACCAATCATA
 410
 420
 AGAAATACTAACAGAAAAAGATTA
 430
 440
 450
 460
 470
 480
 TTAATGATAATTGTTATTGTTATT
 490
 500
 510
 520
 530
 540
 ATTATCAATGTAATTGCCGTATT
 550
 560
 570
 CCATCATAAACGCCATTATC
 580
 590
 600

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APPROVED	O.G. FIG.
by	CLASS
DRAFTSMAN	SUBCLASS

FIG. 11C

A T A A T A C G C C A A T G C A C A T T G T C A A C A T
 610
 620
 630
 G C C A A A A T A G G C A T T A A C A G A C T T T T A G
 640
 650
 660
 A T A A T A C C A T C A A C C C A T C A G A G G A T T A T T
 670
 680
 690
 MET LYS HIS ILE PRO LEU THR LEU C
 T T A T G A A A C A C A T T C C T T A A C C A C A C T G T
 700
 710
 720
 Y S VAL ALA ILE SER ALA VAL LEU LEU THR
 G T G T G G C A A T C T C T G C C G T C T T A A C C G
 730
 740
 750
 ALA CYS GLY GLY SER SER GLY GLY PHE ASN
 C T T G T G G T G G T A G C A G T G G T G G T C A A T C
 760
 770
 780
 R O PRO ALA SER THR PRO ILE PRO ASN ALA
 C A C C T G C C T C T A C G C C C A T C C C A A T G C A G
 790
 800
 810
 GLY ASN SER GLY ASN ALA GLY ASN ALA GLY A
 G T A A T T C A G G T A A T G C T G C T G G C A A T G C A
 820
 830
 840

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APPROVED	O.G.FIG.	CLASS	SUBCLASS
		BY	DRAFTSMAN

FIG. 1

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FIG.1E

APPROVED	D.G.FIG.
BY	CLASS
DRAFTER	SUBCLASS

GLU GLN GLU GLU HIS ALA LYS ILE ASN THR A
 A A C A G G A A G A A C A T G C C A A A T C A A A
 1080
 1060 1070

 SN ASP VAL VAL LYS LEU GLU GLY ASP ILE
 A T G A T G T T G T A A A C T T G A A G G T G A C T T G A
 1100
 1090 1110

 LYS HIS ASN PRO PHE ASP ASN SER ILE TRP G
 A G C A T A A T C C A T T G A C A C T C T A T T T G G C
 1140
 1120 1130

 LN ASN ILE LYS ASN SER LYS GLU VAL GIN
 A A A C A T C A A A A T A G C A A A G A A G T A C A A A
 1150
 1160 1170

 THR VAL TYR ASN GIN GLU LYS GIN ASN ILE G
 C T G T T A C A C C A A G A G C A A A C A T T G
 1180
 1190 1200

 LU ASP GLN ILE LYS ARG GLU ASN LYS GIN
 A A G A T C A A A T C A A A A G A G A A A T A A A C A A C
 1210
 1220 1230

 ARG PRO ASP LYS LYS LEU ASP ASP VAL ALA L
 G C C C T G A C A A A A A C T T G A T G C T G G C A C
 1240
 1250 1260

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APPROVED	O.G. FIG.	
	CLASS	SUBCLASS
	BY	
		DRAFTSMAN

二十一

EU GLN ALA TYR ILE GLU LYS VAL LEU ASP
 T A C A G C T T A T A T T G A A A A G T T C T T G A T G
 1270 1280 1290
 ASP ARG LEU THR GLU LEU ALA LYS PRO ILE T
 A C C G T C T A A C A G A A C T T G C T A A A C C C A T T T
 1300 1310 1320
 YR GLU LYS ASN ILE ASN TYR SER HIS ASP
 A T G A A A A A T T A A T T A T T C A C A T G A T A
 1330 1340 1350
 LYS GLN ASN LYS ALA ARG THR ARG ASP LEU L
 A G C A G A A T A A A G C A C G C A C T C G T G A T T G A
 1360 1370 1380
 YS TYR VAL ARG SER GLY TYR ILE TYR ARG
 A G T A T G T G C G T T C T G G T T A T T A T C G C T
 1390 1400 1410
 SER GLY TYR SER ASN ILE ILE PRO LYS LYS I
 C A G G T T A T T C T A A T C A T T C C A A A G A A A A
 1420 1430 1440
 LE ALA LYS THR GLY PHE ASP GLY ALA LEU
 T A G C T A A A A C T G G T T G A T G G T G C T T A T
 1450 1460 1470

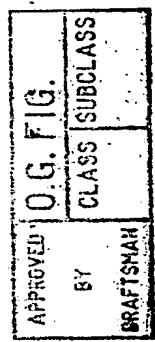


FIG. 11G

PHE TYR GLN GLY THR GLN THR ALA LYS GIN L
 T T T A T C A A G G T A C A C A A C T G C T A A C A A T
 1490 1500

EU PRO VAL SER GIN VAL LYS TYR LYS GLY
 T G C C T G T A T C T C A A G T T A A G T A T A A A G G C A
 1510 1520 1530

THR TRP ASP PHE MET THR ASP ALA LYS LYS G
 C T T G G G A T T T A T G A C C G A T G C C A A A A A G
 1540 1550 1560

LY GLN SER PHE SER SER PHE GLY THR SER
 G A C A A T C A T T T A G C A G T T G G T A C A T C G C
 1570 1580 1590

GIN ARG LEU ALA GLY ASP ARG TYR SER ALA M
 A A C G T C T T G C T G G T G A T C G T T A T A G T G C A A
 1600 1610 1620

ET SER TYR HIS GLU TYR PRO SER LEU LEU
 T G T C T T A C C A T G A A T A C C C A T T A T T A A
 1630 1640 1650

THR ASP GLU LYS ASN LYS PRO ASP ASN TYR A
 C T G A T G A G A A A C A A A C C A G A T A T T A T A
 1660 1670 1680

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FIG. 11H

SN GLY GLU TYR GLY HIS SER SER GLU PHE A C G G T G A A T A T G G T C A T A G C A G T G A G T T A 1690	THR VAL ASP PHE SER LYS SER LEU LYS G C G G T A G A T T A G T A G T A A G A G C C T A A A A G 1710	LYS GLU SER VAL ASN LYS THR LYS ARG T A T A A G G G C A G T G T T A A T A A A A C C A A A C G C T 1730	HIS LYS GLY SER VAL ASN LYS THR LYS ARG T A T A A G G G C A G T G T T A A T A A A A C C A A A C G C T 1750	ILE ASP ALA ASN ILE TYR GLY ASN A T G A C A T C G A T G C C A A T A T C T A C G G C A A C C 1770	ARG PHE ARG GLY SER ALA THR ALA SER ASP T G C T T C C G T G G C A G T G C C A C C G C A A G C G A T A 1790	HR THR GLU ALA SER LYS SER LYS HIS PRO C A A C A G A A G C A A G C A A A A G C A A C C C C T 1810
1690	1710	1730	1750	1770	1790	1810
1710	1730	1750	1770	1790	1810	1830
1730	1750	1770	1790	1810	1830	1850
1750	1770	1790	1810	1830	1850	1870
1770	1790	1810	1830	1850	1870	
1790	1810	1830	1850	1870		
1810	1830	1850	1870			
1830	1850	1870				
1850	1870					
1870						

APPROVED	O.G.FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

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APPROVED	O.G. FIG.
BY	CLASS
GRAFTMAN	SUBCLASS

FIG. 11.

PHE THR SER ASP ALA LYS ASN SER LEU GLU GL
T T A C C A G C C A T G C C A A A A T A G C C T A G A A G G
1900 1910 1920

LY GLY PHE TYR GLY PRO ASN ALA GLU GLU
G C G G T T T T A T G G A C C A A A C G C C G A G G A G C
1930 1940 1950

LEU ALA GLY LYS PHE LEU THR ASN ASP ASN L
T G G C A G G T A A A T T C C T A A C C A A T G A C A A C A
1960 1970 1980

YS LEU PHE GLY VAL PHE GLY ALA LYS ARG
A A C T C T T T G G C G T C T T G G T G C T A A C G A G
1990 2000 2010

GLU SER GLU ALA LYS GLU LYS THR GLU ALA I
A G A G T G A A G C T A A G G A A A A C C G A A G C C A
2020 2030 2040

LE LEU ASP ALA TYR ALA LEU GLY THR PHE
T C T T A G A T G C C T A T G C A C T T G G G A C A T T T A
2050 2060 2070

ASN LYS PRO GLY THR THR ASN PRO ALA PHE T
A T A A A C C T G G T A C G A C C A A T C C C G C C T T T A
2080 2090 2100

APPROVED	O.G. FIG.
BY	
DRAFTSMAN	

FIG. 11J

HR ALA ASN SER LYS GLU LEU ASP ASN
 C C G C T A A C A G C A A A A G A A C T G G A T A A C T
 2110 2130
 PHE GLY ASN ALA LYS LEU VAL LEU GLY S
 T T G G C A A T G C C A A A A A G T T G G G T T
 2140 2150 2160
 ER THR VAL ILE ASP LEU VAL PRO THR GLY
 C T A C C G T C A T T G A T T G T G C C T A C C G G T G
 2170 2190
 ALA THR LYS ASP VAL ASN GLU PHE LYS GLU L
 C C A C C A A A G A T G T C A A T G A A T T C A A A G A A A
 2200 2210 2220
 YS PRO LYS SER ALA THR ASN LYS ALA GLY
 A G C C A A A G T C T G C C A C A A A C A A G C G G C G
 2230 2250
 GLU THR LEU MET VAL ASN ASP GLU VAL ILE V
 A G A C T T T G A T G G T G A A T G A T G A A G T T A T C G
 2260 2270 2280
 AL LYS THR TYR GLY TYR GLY ARG ASN PHE
 T C A A A A C C T A T G G C T A T G G C A G A A A C T T T G
 2290 2310

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APPROVED BY	O.G. FIG.
DRAFT SHAH	CLASS SUBCLASS

FIG.11K

GLU TYR LEU LYS PHE GLY GLU LEU SER ILE G
 A A T A C C T A A A A T T G G T G A G C T T A G T A T C G
 2330 2340

LY GLY SER HIS SER VAL PHE LEU GIN GLY
 G T G G T A G C C A T A G C G T C T T A C A A G G C G
 2350 2360 2370

GLU ARG THR ALA GLU LYS ALA VAL PRO THR G
 A A C G C A C C C G C T G A G A A A G C C G T A C C A A C C G
 2380 2390 2400

LU GLY THR ALA LYS TYR LEU GLY ASN TRP
 A A G G C A C A G C C A A A T A T C T G G G A A C T G G G
 2410 2420 2430

VAL GLY TYR ILE THR GLY LYS ASP THR GLY T
 T A G G A T A C A T C A C A G G A A A G G A C A G G A A
 2440 2450 2460

HR SER THR GLY LYS SER PHE ASN GLU ALA
 C G A G C A C A G G A A A A G C T T A A T G A G G C C C
 2470 2480 2490

GIN ASP ILE ALA ASP PHE ASP ILE ASP PHE G
 A A G A T A T T G C T G A T T T G A C A T T G A C T T G
 2500 2510 2520

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APPROVED	O.G.	FIG:
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG.11L

LU ARG LYS SER VAL LYS GLY LYS LEU THR
 A G A G A A A T C A G T T A A A G G C A A A C T G A C C A
 2540 2550 I
 THR GLN GLY ARG GLN ASP PRO VAL PHE ASN
 C C C A A G G C C G C C A A G A C C C T G T A T T A A C A
 2560 2570 2580
 LE THR GLY GLN ILE ALA GLY ASN GLY TRP
 T C A C A G G T C A A A T C G C A G G T A A T G G C T G G A
 2590 2600 2610
 THR GLY THR ALA SER THR ALA LYS ALA ASN V
 C A G G C A C A G C C A G C A C C G C C A A A G C G A A C G
 2620 2630 2640
 AL GLY GLY TYR LYS ILE ASP SER SER SER
 T A G G G G G C T A C A A G A T A G A T T C T A G C A G T A
 2650 2660 2670
 THR GLY LYS SER ILE VAL ILE GLU ASN ALA L
 C A G G C A A A T C C A T C G T C A T C G A A A T G C C A
 2680 2690 2700
 YS VAL THR GLY GLY PHE TYR GLY PRO ASN
 A G G T T A C A G G T G G C T T A T G G T C C A A A T G
 2710 2720 2730

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 11M

ALA ASN GLU MET GLY GLY SER PHE THR HIS A
 C A A C G A G A T G G G G G T C A T T A C A C A C G
 2750 2760

ASP ASP SER LYS ALA SER VAL VAL
 A T A C C G A T G A C A G T A A A G C C T C T G T G G T C T
 2770 2780 2790

PHE GLY THR LYS ARG GLN GLU GLU VAL LYS *
 T T G G C A C A A A A G A C A A G A A G A A G T T A A G T
 2800 2810 2820

AGTAAATTAAACACAAATGGTTGGTTCGGCT
 2830 2840 2850

GATGGGATTGACGGCTTAATC AAACATGAAAT
 2860 2870 2880

GATTAAGATAAACCCAAAGCCATGCCAA
 2890 2900 2910

TGATTTGATAGCAACGATGGCAGATGATGAG
 2920 2930 2940

TTTCATTATCTGCCATTATGCTTAA
 2950 2960 2970

TTTTGCTTGTCAATTGGTGGTGTGTTATCAC
 2980 2990 3000

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AFFROVED	O.G. FIG.
BY	CLASS
DRAFSMAN	SUBCLASS

FIG. 11N

ATTAATCATAAATTACATATAAATGA
3010 3020 3030

TAAATGATAATTGAAAGTCAGGGTTA
3040 3050 3060

TTTGGTCAATGGTTTCAATTGATTAA
3070 3080 3090

CTTATAATGCGTTATGGTTAGCAAAAAGCT
3100 3110 3120

AAGTCATGAAAGCTATGGTAGTGA
3130 3140 3150

TGTGCACAAAGATGGTCAAAATACTGGTAT
3160 3170 3180

GTTGCTGTCAGGGTGGATGGTTCTGTT
3190 3200 3210

AAATGATAAACAAACGCCATGCCATGCTAC
3220 3230 3240

TGCCAAGTTGTTGCGCACCTCTCAAGAAA
3250 3260 3270

TCCACCAAAACTATGGTAGCATAGCTTTG
3280 3290 3300

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG.1.O

T C G T G A A A C G C C A C G A G G G C A G G T T C A G G G
3310 3320

G C T A T T G C G T G C A A T T G C A G C A G G C A G A C T A
3330 3340 3350 3360

T G A G C T G G C T G C C A A C T A T T G G A C G G C C G
3370 3380 3390

T T A T T T G C A A A A C C C A A A C G C C A A T C G
3400 3410 3420

T G A G A T T G T T G A G C A
3430

APPROVED	O.G. FIG.
BY	CLASS
GRAFTSMAN	SUBCLASS

FIG. 12A

Top1 alignment

10 20 30 40 50 60
 MNQSKQNKSKKKSKQVILKSAISLGILNI--TQVALANTTADKAFAA-TDKTMNVVWILDENVVT
 .----.----.----.----.----.----.
 .Q.QHIFR-----NLLC...-MT..PVY----.NVQAEQAQEKEQ..TIQ.K
 .Q.QHIFR-----NLLC...-MT..PAY----.NVQAGQAQEKEQ..TIQ.K
 .Q.QHIFR-----NLLC...-MT..PAY----.NVQAGQAQEKEQ..TIQ.K
 .TKKPYFR-----LSIISC.LI.CYVKAE.SIKDTKE.ISS.VD.QS.E-DSE.ETIS..
 70 80 90 100
 AKKNA-RKANEVTIGLGVVKAETTINKEQVLMNIRDLTRYDP
 .----.----.----.----.----.
 ...QKT.RD.....L..SSD.LS.....
 ...QKT.RD.....L...D.LS....D.....
 ...QKT.RD.....L...D.LS....D.....
 E.IRD..D.....II..S.S.SR.....
 110 120 130 140 150 160
 GIAVVEQFGASSSGYSTIREMDKRNRAVLVDGINQHQHYALQGPVAGKNYA-AGGATNEIEYEN
 .----.----.----.----.----.
 SLT...VS.I.S.TA.AALG.TRT.GSS.....
 SLT...LA.I.S.TA.AALG.TRT.GSS.....
 SLT...LA.I.S.TA.AALG.TRT.GSS.....
 S...R...L...LP.T.S.W.S.LMATSGYSGT.....
 4223
 Q8
 B16B6
 M982
 FA19
 Eagan

APPROVED	O.G. FIG.:
BY	CLASS SUBCLAS\$
GRAFTMAN	

FIG. 12B

170 180 190 200

VRSVEISKGANSSSEYGSAGALSGSVAFVTKTADDIIKDQ

4223

Q8

KA.....S.....N.....A.....Q.....A.....GE.
 KA.....S.....V.Q.....A.....Q.....V.GE.
 KA.....S.....V.Q.....A.....Q.....V.GE.
 KA.....GS.....N.....A.....T.QS.S.A..LEGD
 Eagan

210 220 230 240 250 260

KDWG/QTKTAYASKNNNAWMNSVAAAGKAGSFSGGLIYTDRRGQEQYKAHDDAYQGSQSTDRAVA

Eagan

270 280 290 300

TID-----PNNFITFLIANECANFNYEACAAGGQTQKLQAKPNT

4223

Q8
 DE.KKEGGSQY.Y.IVEE.H.-A.KNKL--.ED.SVKD
 VE.----SSEFYAY.IVED.EGK..T.KSKP--.KDVGKD
 VE.----GSKYAY.IVEE.K.GH.K.K.NP--.KDVGKD
 ...----KSSGY.V.QG.P.DDK-....PP.TLST
 Eagan

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APPROVED	O.G. FIG.
BY	CLASS
GRAFTSMAN	SUBCLASS

FIG. 12C

VRDKVNVKDYTGPNRLIPLTODSKSLLRPGYQINDK-HYVGVYEITKONYAMQDKTVPA
 310 320 330 340 350 360

E.KT.STDQ...S...LA...EYG.Q.W.F...WH.DNR-...A.L.R.Q.TFDIR.M...
 E.QT.STR....FLAD..SYE.R.W.F...FRFENKR..I..IL.H.Q.TFDIR.M...
 K.QT.STR....FLAD..SYE.R.W.F...FRFENKR..I..IL.R.Q.TFDIR.M...
 QSET.S.S...A..IK...MKYE.Q.WF..G..HESEQ-..I..IF.F.Q.KFDIR.M.F..
 370 380 390 390 390 400
 YLTVDIEKSRLSNHAQA--NGYYQCNILGERIRDITGPD
 4223
 G.....A..AN
 .F.SE.YWPGS.KGL-----K.S.D.KA..LFVQGEGS
 F..KAVFDANSKQAGSLPG--..K.A..HKYGGIFTINGENG
 F..KAVFDANQKQAGSLPG--..K.A..HKYGGIFTSGEN
 ..SPTERDDSSRSFSYFMQDH.A..HIE---
 410 420 430 440 450 460
 ---SGYGTINVAHGVFTYDEKHQKDTEIGLEYWYDSKGKGETKWFDDVVRVSYDKQDITIRSQLTNHC
 TLQGI...---T...R.T.N.Y.V...HNADKDT.A.YA.L...R.G.D.DNR.QQ...
 ---ALV.AE.GT....T.T.S.Y.....TNADKDT.A.YA.L...R.G.G.DNFQQ...
 ---APV.AE.GT....T.T.S.Y.....TNADKDT.A.YA.L...R.G.G.DNFQQ...
 ---D.R.VK.S.LYF..H.R.Q.V.I..I.EN.NKAGII.KAVL.ANQ.N.I.D.YMRH...

APPROVED	O.G. FIG.
BY	CLASS
CRAFTSMAN	SUBCLASS

FIG. 12D

470 480 490 500 500 500
 STYPHIDKNCTPDVNKPFSVKEDNNAYKEQHMLIKAVHN 4223
R.G.Y.FYKS.RMI.E.SR.FQ.K Q8
 .HDGS-..R.G.Y.FYKS.RMI.E.SR.FQ.K B16B6
 .ADGS-..Y.R.SAD.YYKS.RVI.G.S.R.LQ.A.K M982
 .ADGS-..Y.R.SAD.YYKS.RVI.G.S.K.LQ.A.K FA19
 .L.NPS..R.TLD..Y.YYRS.R.V..K..MLQIMLE Eagan

 510 520 530 540 550 560
 KKVALGSTHHHNLQVGYDKFNSLSSREDYRLATHQSYQRKDYPPLPSNPLPDFK-KPILGSNN
N
 .AFDTAKIR.NLSINL..R.K.Q.HS.Y.QNAVOQAYD.I..KP.F.NGS-.-D
 .SFDTAJUR.NKSVNK.F.R.S.B.RHQ.YYQHANRAYSSK-..KTAN.NGD.-.-S
 .SFDTAKIR.NLSVNL..T.G.N.RHQ.YYQSANRAYS.K..Q.NGRKTS---PN.REK
 ..IQQNWLQ.VFNL.F.D.T.A.QHK..-.TRRVITATA-.SI.RK---.GETG..RN.LQS

 570 580 590 600
 KPICLDAYGYGHDPQACTAKNSTYQMFALKKGIEQYN 4223
 R.....Q8
 N.YRVSICK-----B16B6
 ..YWSIG-----M982
 N.YWSIGR-----FA19
 Q.VLYPKPED-----Eagan

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APPROVED BY	O.G. FIG. CLASS	SUBCLASS
DRAFTER/SHAR		

FIG. 12E

610 620 630 640 650 660
 QKTNTIDKIDYQAIIDQYDKQNPNSTIKPFEKIQLQEKYKNDIDEGLGKAYKDLRNEMAGMT

.....V.....DE..R..N.....

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4223

Q8

B16B6

M982

FA19

Eagan

670 680 690 700

NDNSQQNANKGRDNITYQPNQA-TVVKKDDKCKYSEIINS-Y

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710 720 730 740 750 760

ADCSTRHISGDNYFIAALKDNMTINKYVLDLGLGARYDRIKHKSDVPLVDNSASNQLSMNFGW

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APPROVED BY	O.G. FIG.
BRAPFMAN	CLASS
	SUBCLASS

FIG. 12F

770 780 790 800 4223
 VKPINMMDIAYRSSQGIFRMPSFSEMYGERFGVTICKG

 L..FT.M.LT..A.T...L...A....W.A.ESIKTL
 L..AD..LT..T.T...L...A....W.S.OSKAV
 L..AD..LT..T.T...L...A....W.S.DK.KAV
 I...E..LS..L.T...N.....W.Y.GKNDEV
 Eagan

810 820 830 840 850 860
 TQHGCCKGLYYICQQQTVHQTKIKPEKSFNQEIGATLHNHLSLEVYFKNRYTDLIVGKSEEIR

-D.....R.A.IVFKGDF.N..A..N.A.R...AFGY-.T.
-ID.....K.A.IVFKGDF.N..A.W.N.A.R....RGY.AQI
-ID.....K.A.IVFKGDF.N..A.W.N.A.R....RGY.AQI
-WG.F...T.R...F.LA.KGDF.NI.I.H.S.A.RN..AFA-..LS
 870 880 890 900
 TLTGDDWAGKQRGKGDLGFHNGQDADLTGINILGRD

-ON.QTSAS..P.YR.A.N.RIA.....KI..
 K-----N..EEA...PAYL.A.S.RI.....KI..
 K-----D..EQV..NPAYL.A.S.RI.....KI..
 K-----NGT...NY.Y..A.N.K.V.V..TAQ..
 Eagan

Approved	O. G. FIG.
By	GLASS
DRAFTSMAN	SUBCLASS

FIG. 12G

910 920 930 940 950 960

LNAVNSRLPYGLYSTLAVNKVDVKCKTINPTILAG-TMILFDALIQPSRYVVGTYDAPSQKMGAA

W.H.G. W.G.C. D. R.I.K. D.A.D.I.R.A.D.R.T.F.V. S.Y. V. L. H. D.G.I. . . I
 W.N.G. W.D.K. E.W. . . F. . . R.H. R.D.I.K.K.R.A.D.R.T.D.I.Q.S.H. Q. E.G. . . . V
 W.N.G. W.D.K. E.W. . . F. . . R.H. R.D.I.K.K.R.A.D.R.T.D.I.Q.S.H. S. . . Q. E.G. . . . V
 F. G.L.M.K. I. . . W.A.F. . . Q.K. . D.Q.K.I. A.G. . S.V.S.S.Y. II. . . . H. . . N.T. . . I

970 980 990 1000

N.A.I.F.T.H.S.D.A.K.N.P.S.E.L.L.A.D.K.N.L.G.N.G.N.I.Q.-T.K.Q.A.T.K.A.K.S.T.P

4223
 - - - - - - - - -
 . T.M. Y.K. S.V.D. . . G.S.Q.A. L. . . A.N.A.K. A.-A.S.R.R.T.R.
 . G.M.L. Y.K. E.I.T. . . G.S.R.A. L. . . S.R.N. . A.-. A.R.R.T.R.
 . G.M.L. Y.K. E.I.T. . . G.S.R.A. L. . . S.R.N. . A.-. A.R.R.T.R.
 . T.M. Q.K. S.Q.N. . . G.K.R.A. . . - . S.R.D.V. S.-. R.K.L.T.R.A
 Eagan

1010 1020 1030 1040 1050 1060 1070

W.Q.T.L.D.L.S.G.Y.V.N.I.K.D.N.F.T.L.R.A.G.V.N.F.N.T.Y.Y.T.W.E.A.L.R.Q.T.A.E.G.A.V.N.Q.H.T.G.L.S.Q.D.K.H.Y.G.R.Y.A.A.P.G.R.N.Y.Q.L.A.E.M.K.F*

4223
 . Y.V.T. V. . . Y. . K.H.L. I.L. Y.R. V. . . N.V. G. - - - K.N.W.G.V. N. T.F.S. *
 . Y.T.V. V. . . Y.T. . . K.H. I.L. Y.R. V. . . N.V. G. - - - K.N.W.G.V. N. T.F.S. *
 . Y.T.V. V. . . Y.T.V. . . K.H. I.L. H.R. V. . . N.V. A. - - - K.N.W.G.V. N. T.F.S. *
 . H.I. V. . . Y.M.A.N.K. I.M. . . L. I. . . L. Y.R. V. . . V. Q. - - - Q.W.G.S. T. . . S. . . . T. T. . . . *
 Eagan

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

FIG. 13A

Top2 comparison

10 20 30 40 50 60
 MKHIIPLTTLCVAlSAV-LLTACCGS-GGSNPPAPTPINASGSGENTAGGTDTNT-ANAG
 .NN-..VNQAAAMLP.F..S..L.G-...
 .NN-..VNQAAAMLP.F..S..L.G-...
 .NN-..VNQAAAMLP.F..S..L.G-...
 ..SV..ISGGGLS---F..S..S.-...
 70 80 90 100
 NTGFT---NSGTGSANTPEPKYQDVPTKEKDK-VSSIQEPM 4223
 .A...GGA...A...S...K...DE.K.AF-..G...
 -FDLD SVE---.VQDMHSK...EDEKS-QP.SQDD..ENSGA.- Q8
 -FDLD SVD---.EAPRPA-.....SS...PQAQ.D-----QG B16B6
 -FDLD SVD---.EAPRPA-.....PSK.P.AR.D-----QG M982
 -FDVDNV--.N.P.--SK.R...DTSNQRK.S-NIKKLF1.SL FA19
 Eagan
 110 120 130 140 150
 GYGMALSKINHNRQDTPLD-EKNITL--DGKKQVAEG-KKSPLPFS-LDV-ENKLILDGYIA
 ...VE.-.LRNMIP.EQEEH-A.IV-.N--.VV.LEGDL-.HN.FDN.IWQNIK.SKEVQTVY
 ...F.V-.LPRR.AHFN.KYK..HKP.GSM.W-----LQRGEPNNSFS.RDE.E---
 ...F.M-RJRKRR.WYP--GAE.SEVK.NES.WEATGLPKP.E-..KRQKS.I.KVET..D-S
 ...F.M-RJRKRR.WHPSANPK.DEWK.KND.WEATGLPTEP.K-..LKQQS.ISEVEN.N-S
 G..K.VAQ..RENKEPSFLN.DDY...SY..S.STI.KDVK.NNK-

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APPROVED	O.G.	FIG.
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG.13B

160 170 180 190 200 4223
 RMN/ADKNAIGDRIKKENKEISDEELAKQIKEAVRKSHEFQQV-
 NQEKNIEDQIK.EN.QRPDKKLDDV.L.AYIEKVJDDRTELA
 Q8
 -----K.R.SS.LI-.SKWED3QSR.VGYTN.T---
 B16B6
 DIYSSPYLTTSNHQNG----.AGNGVN.P.NQATCHEN..---
 M982
 YTSPYLSDQDADS----.HANG.N.P.NE.TDYKK.----
 FA19
 ---G..--L..S..-----PSTTNPP.K---.HG.---
 Eagan

210 220 230 240 250 260
 LSSLENKIFHSNDGITKATTTRDLKYVDIGY-YLANDGNLYTWTKTDLKMLGPVGGVFTYNGTT
 KPIY.KN.NY.H.KQN..R.....RS..I.RSGYS.--IIPK.IAKT.FD.AL..Q..Q.
 -----RS..V..-KN.IDIKNNIV.F---D.YLY.K.KEP
 -----YS.WF.KH.ASEKDFSN.KI.S---DD.YI..H.EK
 -----YS.WF.KH.KSEVKNNENGIVSAKR--D.YI..H.DK
 -----YS.LY.TPSWSLINDS.-N..FY..YY.YA..Y.NK.
 270 280 290 300 4223
 AKELPTQDAVKYKGHMDFTID/ANRRNRSEVKENS--QA
 ..Q..VSQ-....T.....-KKGQS..SFGT-.QRL.
 S...-SEKIT...T..YV..AME-KQ..-GLG-.A..G
 PSRQ..ASGK..I...V.H.V..TKKGQD.R.IIQP.KK.G
 PSRQ..ASE..T...V.H.V..TKQGQK.NDIL.T.KG.G
 .TN..WNGVA....T...I.ATK.-GK.YPLSNG.H.---
 Eagan

Approved BY DRAFTSMAN	O.G. FIG.
CLASS	SUBCLASS

FIG. 13C

310 320 330 340 350 360
 GWYGAASSKD-EYNBLLTKEEDSAPDGHSQEYGHISSEFTVNFKERKLTGRLF'SN---LQDRHKEN
 .DR.S.M.YH---PS...D.KNK..N.YN.....D.SK.S.K.E.S...---I.G...S
 DK-S..L AL--.EGV.RNQAE-ASS..TD-F.MT...E.D.SD.TIK.T.YR.NRIT.NNSENK
 DR.S.F.CDGS.EYSNKN-.STIK.D.E.-.FT.NLE.D.GN.....IR.NAS.NNNNNND
 DK.S.F.CDEG.TISNR.-DSNIN.K.E.-.FT.N.K.D.NN.....IR.NKVINTAASDG
 --.RR-.AIP.DID.EN-DSANG.-I.--LI...SADGGT....Q.-.YTKRKTTINQPYE
 370 380 390 400

400
 VTKTERYDIDANIHGNERGSATASNK--NDTSK-HPFITS DAN
 N..K.....Y.....DTTEASK.....K
 QI..T..T.Q.TL.....K.K.L AD.--GA.NGS...I..SD
 KHT.QY.SL.Q.T...N.T..TD.K-ENET.L...V..SS
 Y.-.Y.SL.TLR...S.K.I.TD.PNTGGT.L...VF..SS
 KK.L--...D.YS.....TVKPTE.--.SEE--...EGT
 410 420 430 440
 NRLEGGFYGPKGEELAGKF.LINDNK.LFGVFGAKRESK--.AEEKTE--
 S...NA.....S.....VAA.....QKD.KDGENA.GPA.....
 S-.S...F.....Q.....GFR..SD.Q.VAV.GS..TKD.LENGAA.SGS.G-AASGGAA GTISSE
 S-.S...F.....Q.....GFR..SD.G.VAV.GS..TKDST-----NGNAP-AASSGRGAATMPS
 --...NA...G...AT..RV...S..ETEETKKEALSK.TLIDGLITFSKKTDA

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APPROVED BY	O.G. FIG. CLASS	SUBCLASS
DRAFTSMAN		

FIG. 13D

450 460 470 480 490 500 510 520 530
 -----AII DAY ALG TINTIS VAT -TFTPTEKQLDNFGVAKKL V-----
 -----..... KPGT.NPA..ANSK.E.....
 -----TVI...RIT-----GEEFTKE.I.S..DV...L
 NSKLTIV...VE.T-----INDKCI.N...S..AQ..
 ETRITIV...VE.T-----PDGKEI.N...S..TR..
 KTNATTSTA.NTTDTTANTI.D--EKN.KTEDISS..E.DY.L
 Eagan
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 510 520
 LGSTVTDIVP-----TDATK--NEFTKDK---PESATINEAGETLM\NDEVSV----
 G...DV...E...K....K.....I.....
 VDGVELS.L.--SE-GNKA
 VDGIM.P.L.KDSESGNTQADKGKNGG--T...RKFEHT...DKKD.QAGTQINGAQTA
 VDGIM.P.L.--TESGNGQADKGKNGG--TD..YETTYT...DKRTKAQTGAGEMQTA
 IDKYP.P.L.--DKNTN-----FI.SK----
 530
 -----RTYGKN-----FEYLKFGEISGGSH
 -----.....YGRN-----
 --QNGTKAT-----VCCSNLD.MS..K..KENKD
 GDTNGK--T...EVE-VCCSNIN...Y.M.TRKN.K
 GVNGGQVGT...KVQ-VCCSNIN...Y.L..RENN
 --HHTVGN-.R.KVEAVCCSNISDVKS.MYYEDPLKE
 4223 Q8 B16B6 M982 FA19
 Eagan

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
	GRAFTSMAN	

FIG. 13E

APPROVED	O.G.	FIG.
BY	CLASS	SUBCLASS
GRAFTSMAN		

FIG. 13F

680 PNANEYGGST-----NADDSKASV
 HDT.....
 K..I.....SFPGNAPEGKQE-
 .K.E.L..W.AYPGDKQTEKATATSSDG---.SAS.-.T.
 ...E.L..W.AYPGNEQTKNATEVSENG---.SAS.-.T.
 .K.S.L..Y..YNGNSTAINSESSSTVSSSS.SKNAP.A.
 690
 700 VFGTKRQQEV-K*
E..-.*
 ...A....L.Q-*
 ...A....P.Q-*
 ...A...KL..-.*
ARQ.V.TT.*

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 Q8
 B16B6
 M982
 FA19
 Eagan

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLAS

Construction of TBP1 Expression Plasmid

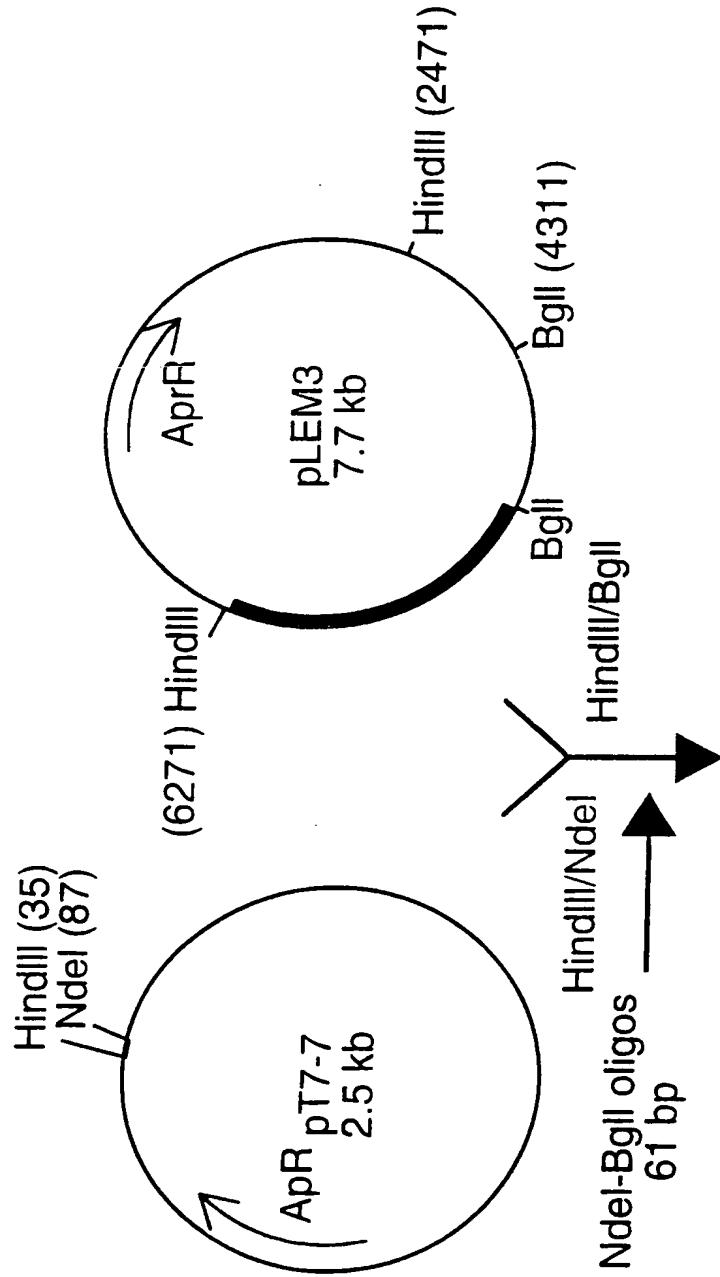


FIG. 14A

APPROVED	O.G. FIG.
BY	CLASS
GRAFTSMAN	SUBCLASS

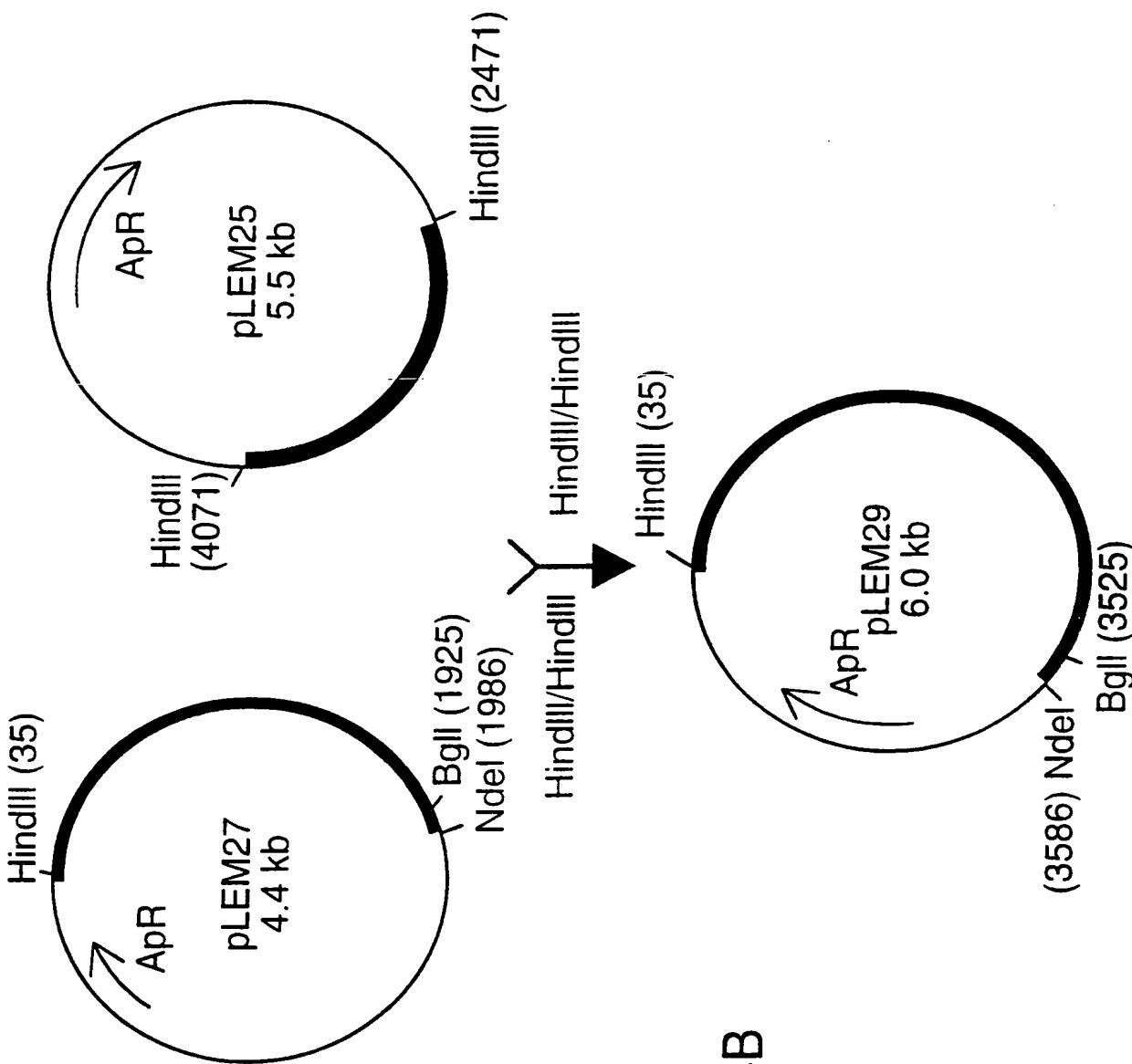
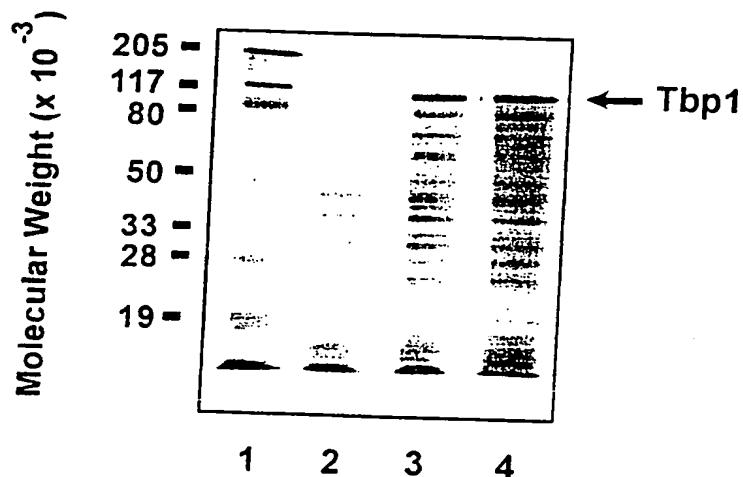


FIG.14B

Expression of rTbp1 in *E. coli*

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
BRAFTHAW	



1. Prestained molecular weight markers
2. pLEM29B-1 lysate, non-induced
3. pLEM29B-1 lysate, 1 hr post-induction
4. pLEM29B-1 lysate, 3 hr post-induction

Fig.15

Purification of Tbp1 from *E.Coli*

APPROVED	O.G. FIG.
BY	CLASS
GRAFISHAN	SUBCLASS

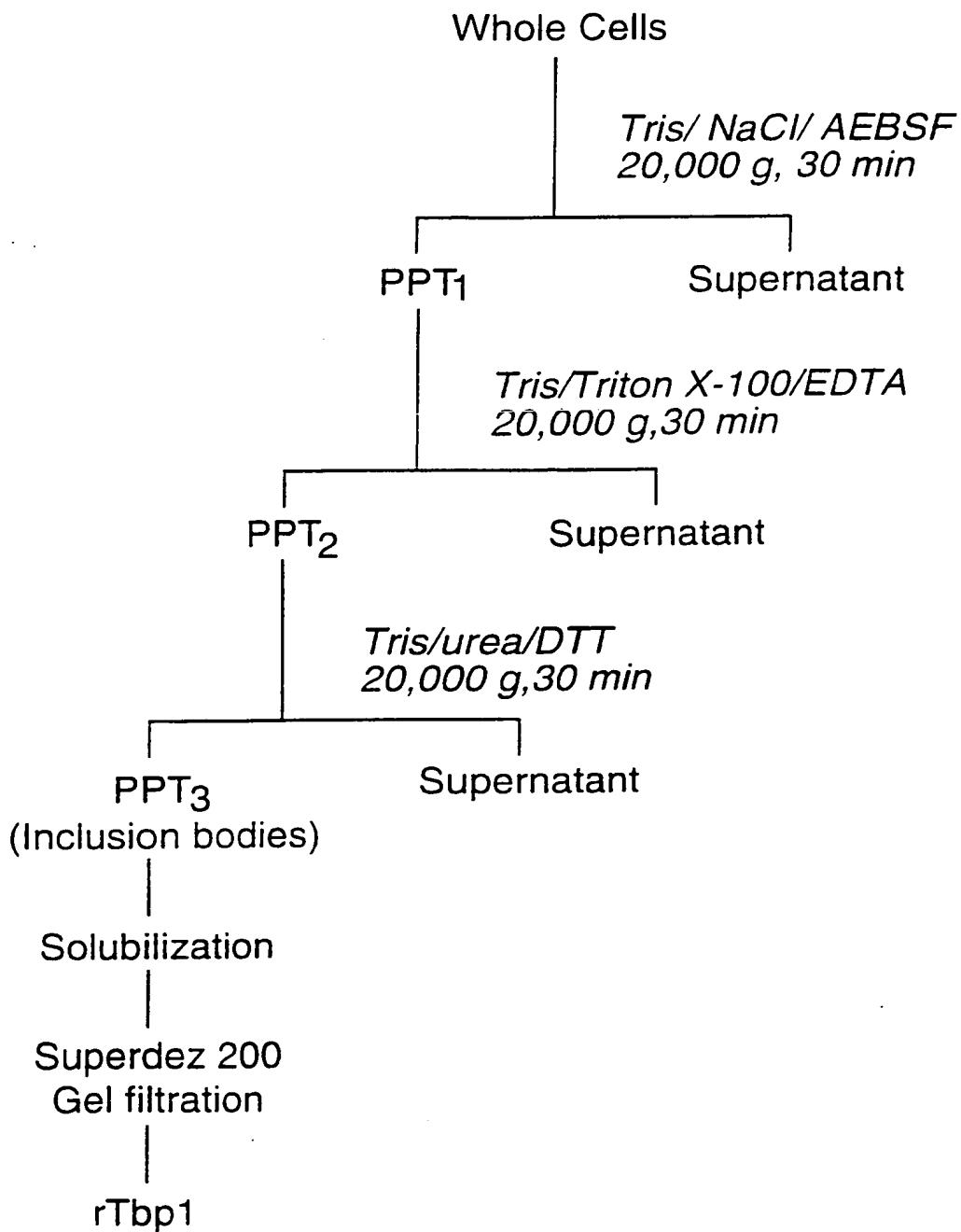
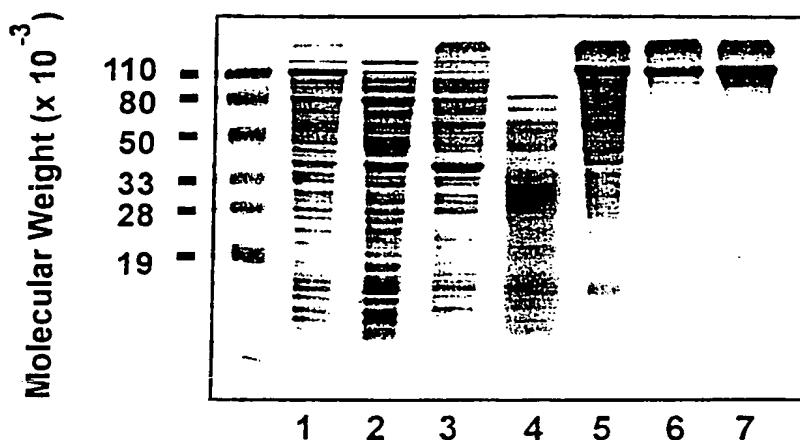


FIG.16

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

Purification of rTbp1 from *E. coli*



1. *E. coli* Whole cells
2. Soluble proteins after 50 mM Tris/ NaCl extraction
3. Soluble proteins after Tris/ Triton X-100/ EDTA extraction
4. Soluble proteins after Tris/ urea/ DTT extraction
5. Left-over pellet (rTbp1 inclusion bodies)
- 6.7. Purified rTbp1

Fig.17

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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

CONSTRUCTION OF TBP2 EXPRESSION PLASMID

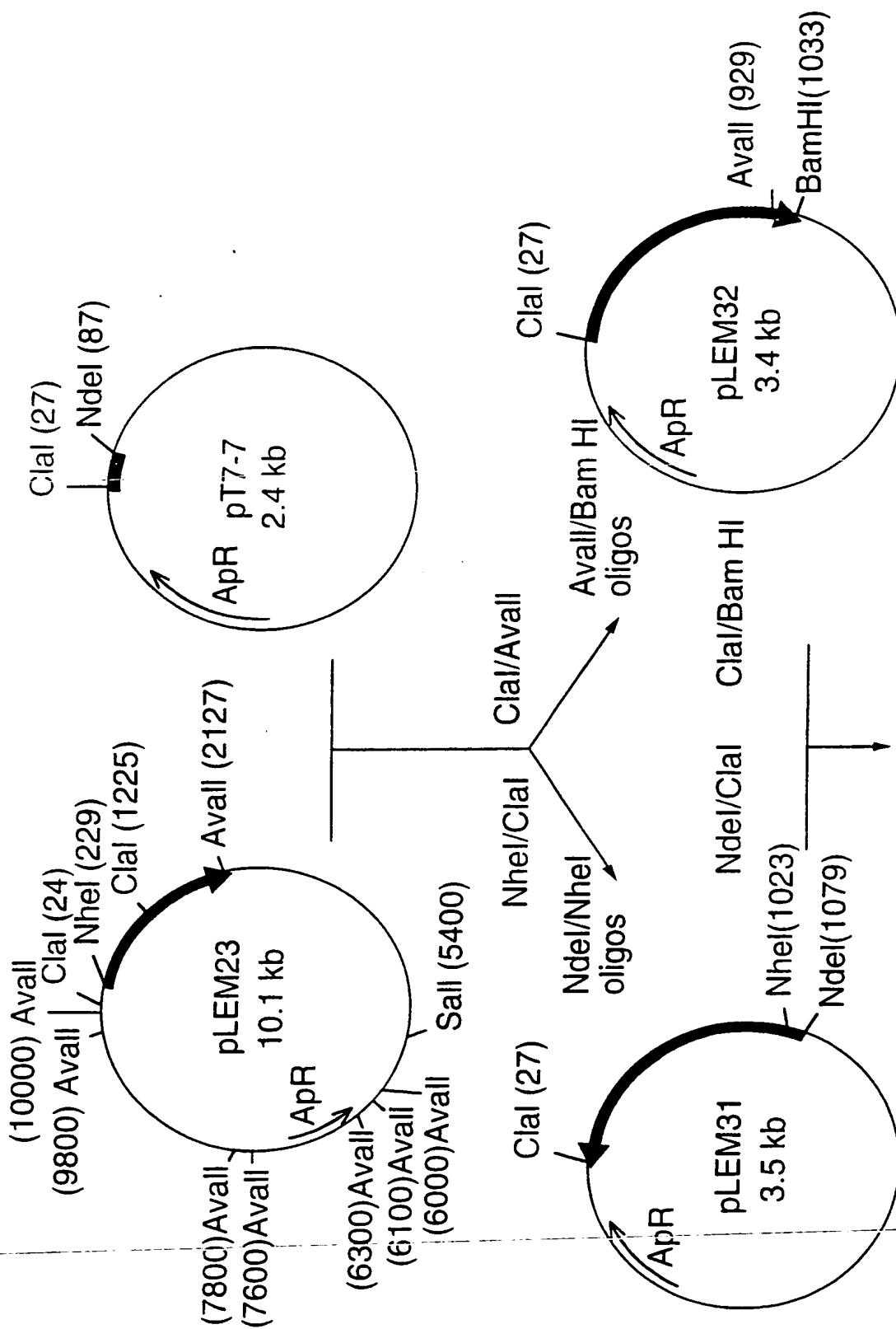


FIG. 18A

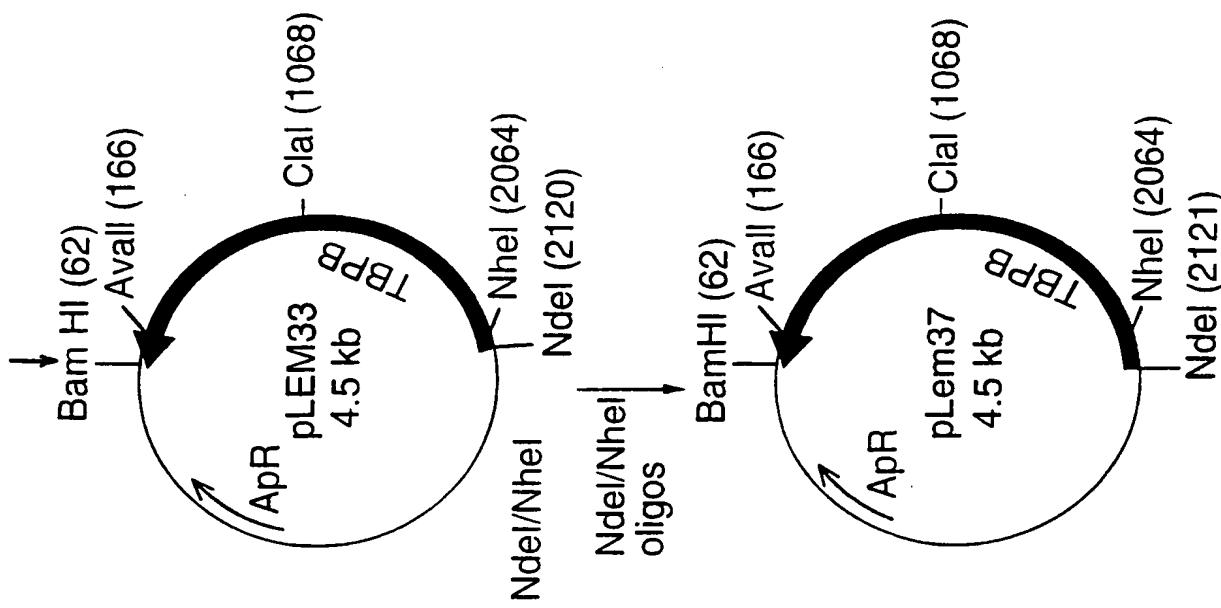
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APPROVED	O.G.FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS



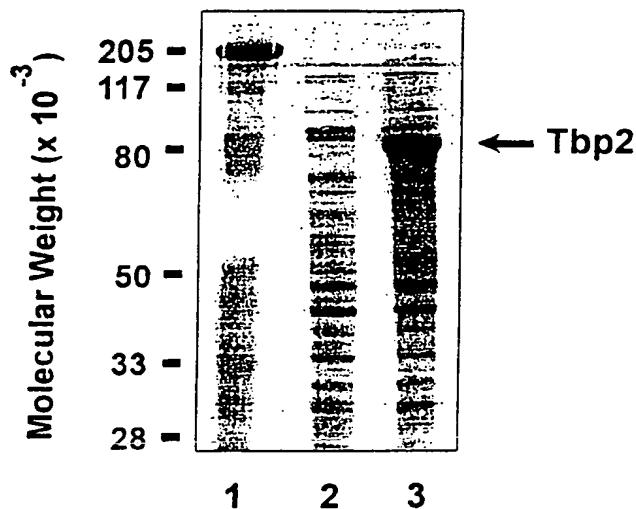
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Expression of rTbp2 in *E. coli*



1. Prestained molecular weight markers
2. pLEM37B-2 lysate, non-induced
3. pLEM37B-2 lysate, induced

Fig. 19

APPROVED	O.G.	FIG.
BY	CLASS	SUBCLASS
DRAFTSMAN		

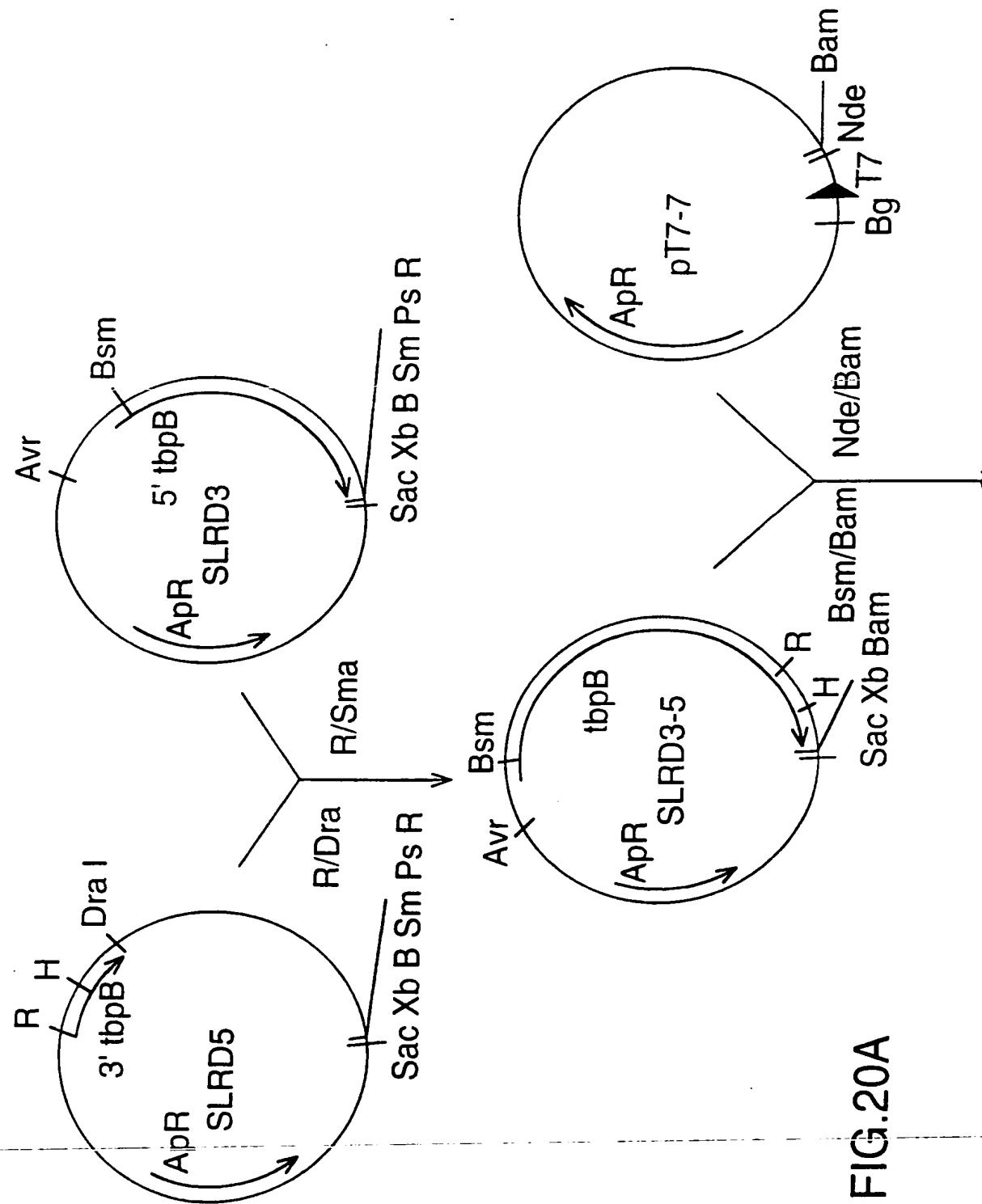


FIG. 20A

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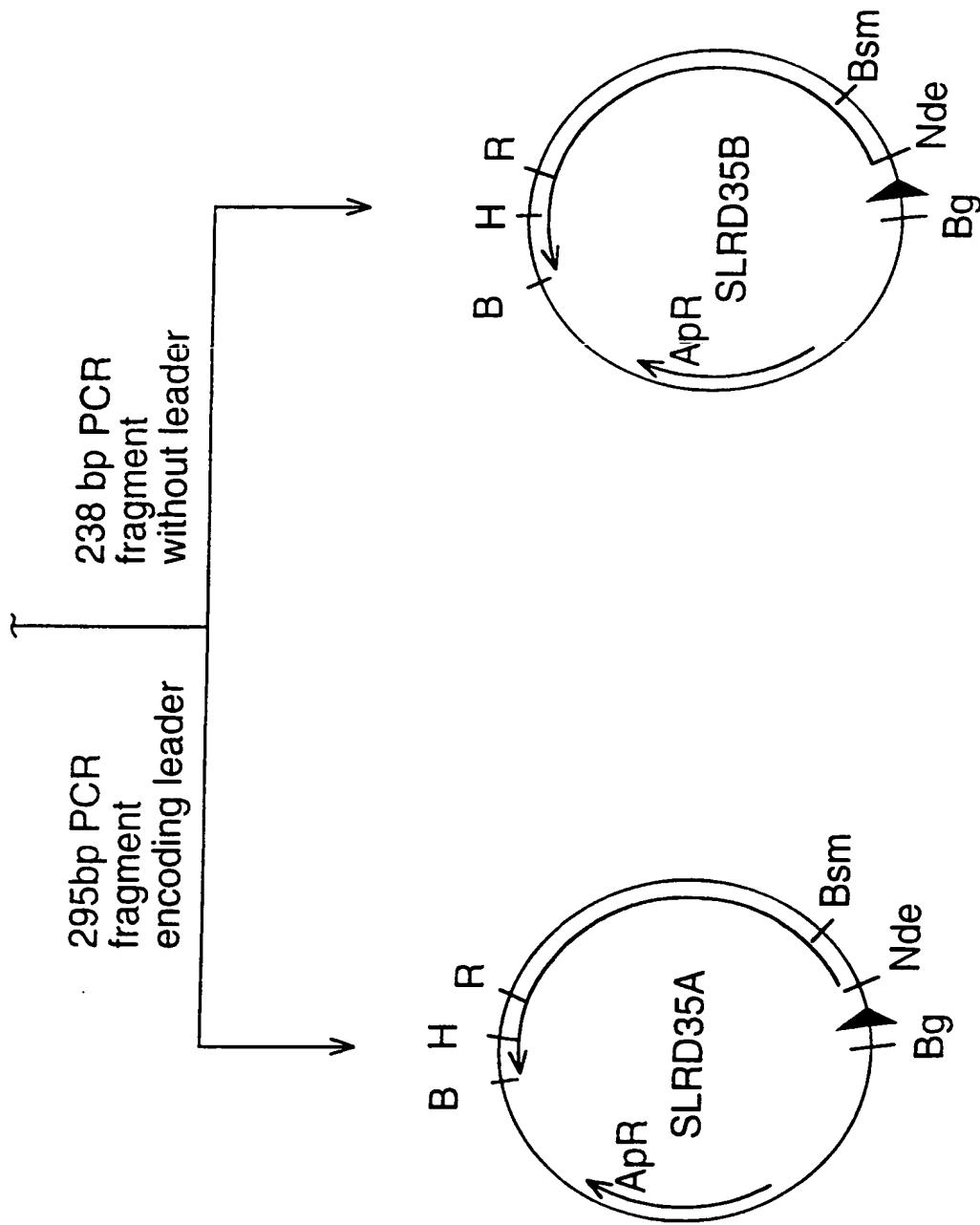
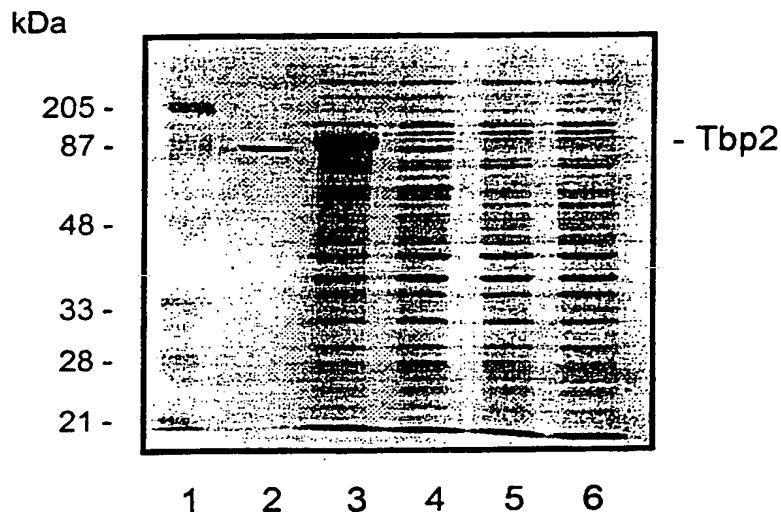


FIG.20B

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Fig 21. Expression of Q8 rTbp2 protein in *E. coli*

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
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1. Prestained molecular weight markers
2. 4223 rTbp2 protein
3. SLRD35A lysate, 3 hr post-induction
4. SLRD35B lysate, 3 hr post-induction
5. SLRD35A lysate, non-induced
6. SLRD35B lysate, non-induced

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

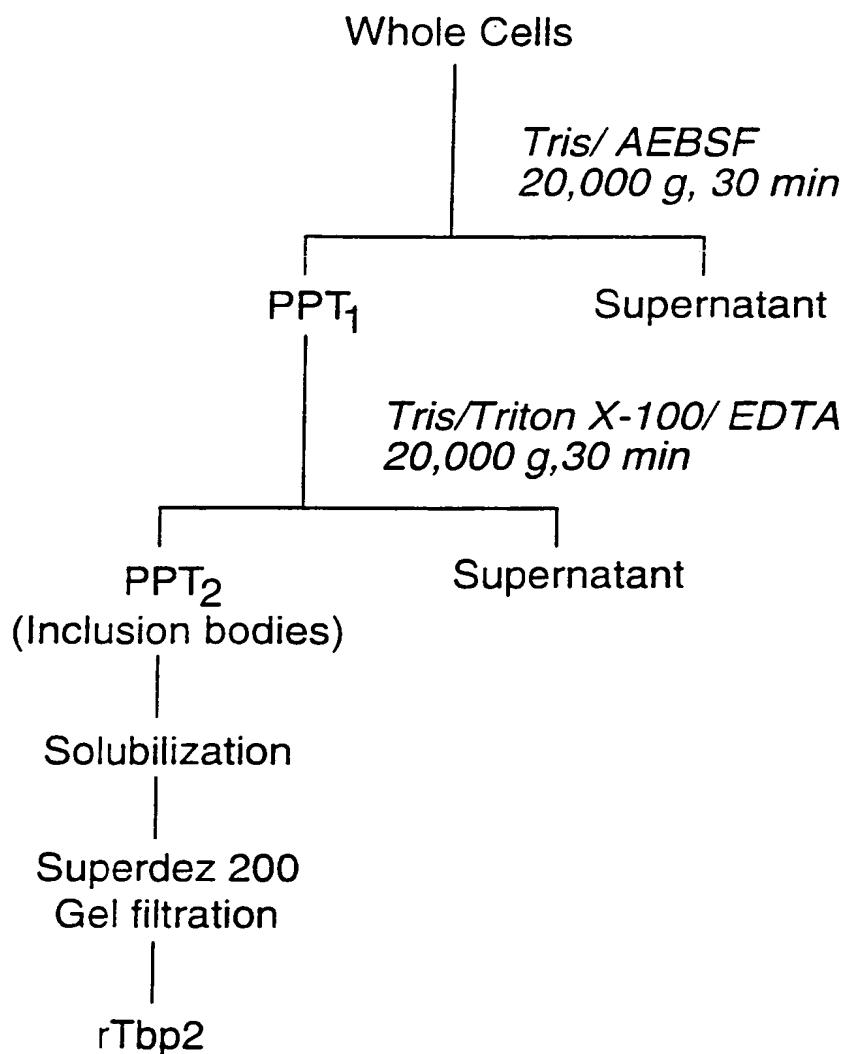
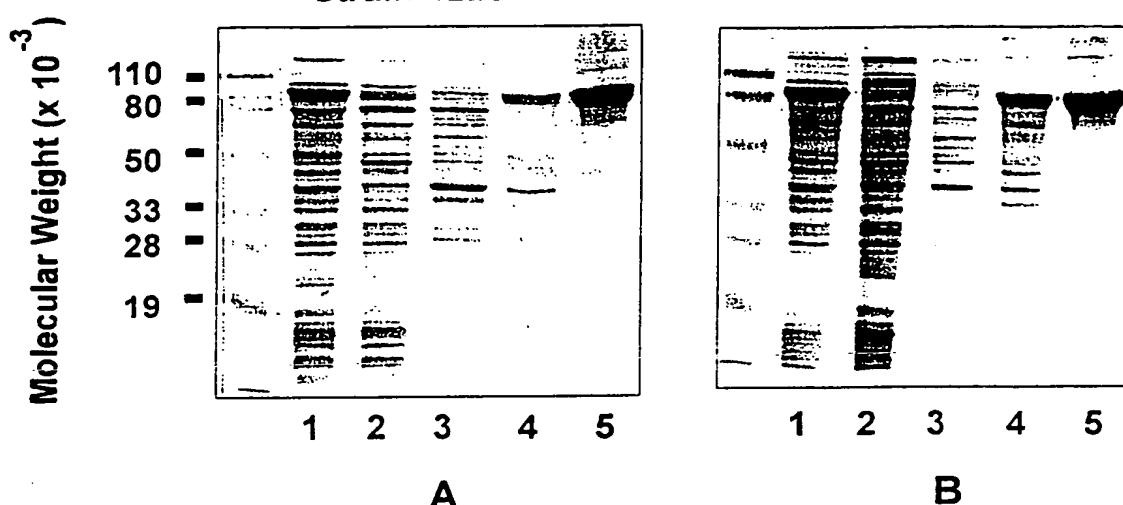
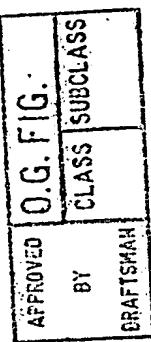
Purification of Tbp2 from *E.Coli*

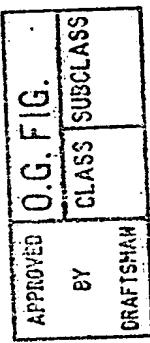
FIG.22

Purification of rTbp2 from *E. coli*

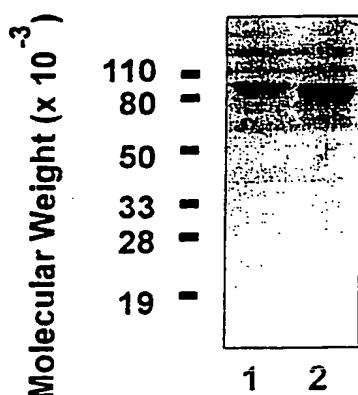


1. *E. coli* Whole cells
2. Soluble proteins after 50 mM Tris extraction
3. Soluble proteins after Tris/ Triton X-100/ EDTA extraction
4. Left-over pellet (rTbp2 inclusion bodies)
5. Purified rTbp2

Fig.23



Binding of Tbp2 to Human Transferrin



1. rTbp2 (strain 4223)
2. rTbp2 (strain Q8)

Fig.24

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APPROVED	O.G. FIG.
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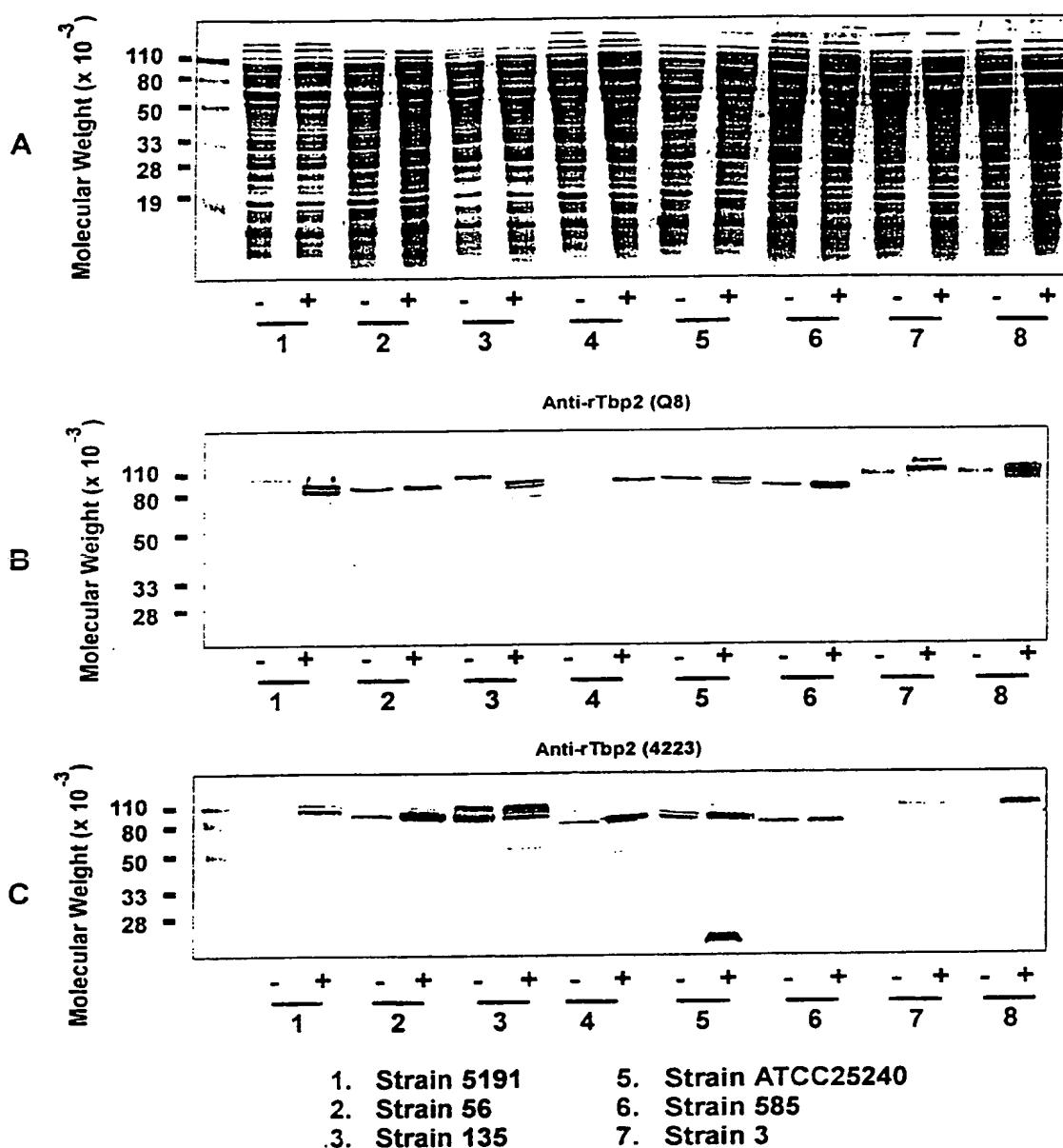


Fig.25

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Figure 26 Restriction map of *M. catarrhalis* strain R1 *tbpB*

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

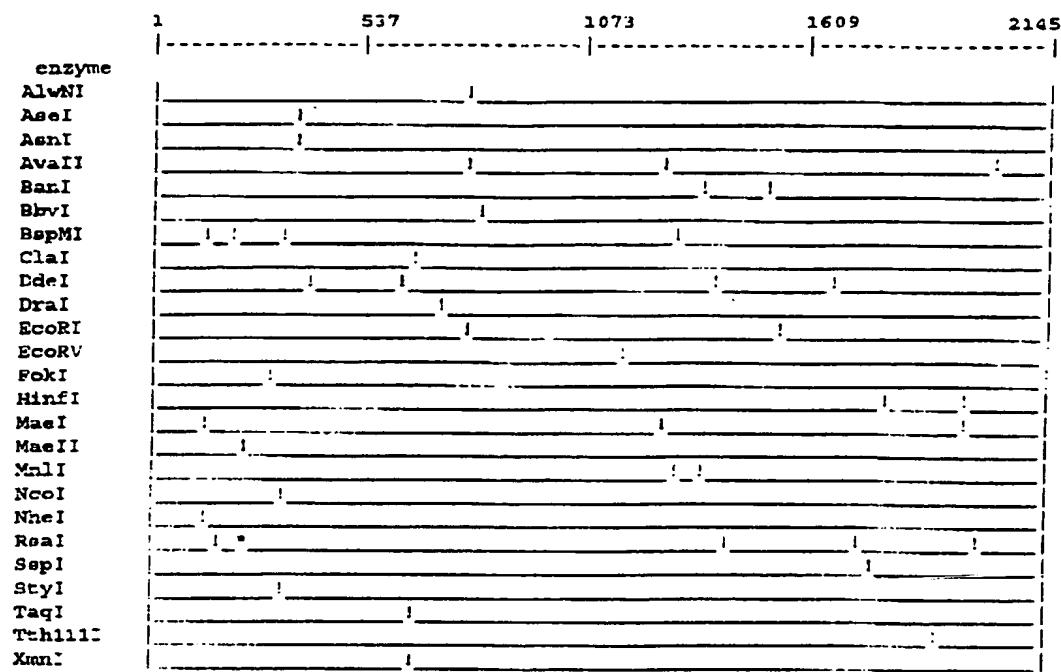


Figure 27 Nucleotide and deduced amino acid sequence of *M. catenialis* R1 *tbpB*

APPROVED	O.G. FIG.	
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	DRAFTSMAN	

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FIG 27 (cont.)

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
	GRAFTSMAN

675 702
AAA ACA ACC AAA GCA ACC ACA CGA GAT TTA AAA TAT GTT GAT TAT GGT TAC TAC
Lys Thr Thr Lys Ala Thr Thr Arg Asp Leu Lys Tyr Val Asp Tyr Gly Tyr Tyr

729 756
TTG GTG AAT GAT GCC AAT TAT CTA ACC GTC AAA ACA GAC AAC CCA AAA CTT TGG
Leu Val Asn Asp Ala Asn Tyr Leu Thr Val Lys Thr Asp Asn Pro Lys Leu Trp

783 810
AAT TCA GGT CCT GTG GGC GGT GTG TTT TAT AAT GGC TCA ACG ACC GCC AAA GAG
Asn Ser Gly Pro Val Gly Val Phe Tyr Asn Gly Ser Thr Thr Ala Lys Glu

837 864
CTG CCC ACA CAA GAT GCG GTC AAA TAT AAA GGA CAT TGG GAC TTT ATG ACC GAT
Leu Pro Thr Gln Asp Ala Val Lys Tyr Lys Gly His Trp Asp Phe MET Thr Asp

891 918
GTT GCC AAA AAA AGA AAC CGA TTT AGC GAA GTA AAA GAA ACC TAT CAA GCA GGC
Val Ala Lys Lys Arg Asn Arg Phe Ser Glu Val Lys Glu Thr Tyr Gln Ala Gly

945 972
TGG TGG TAT GGG GCA TCT TCA AAA GAT GAA TAC AAC CGC TTA TTA ACC AAA GCA
Trp Trp Tyr Ala Ser Ser Lys Asp Glu Tyr Asn Arg Leu Leu Thr Lys Ala

999 1026
GAT GCC GCA CCT GAT AAT TAT AGC GGT GAA TAT GGT CAT AGC AGT GAA TTT ACT
Asp Ala Ala Pro Asp Asn Tyr Ser Gly Glu Tyr Gly His Ser Ser Glu Phe Thr

1053 1080
GTT AAT TTT AAG GAA AAA AAA TTA ACA GGT GAG CTG TTT AGT AAC CTA CAA GAC
Val Asn Phe Lys Glu Lys Lys Leu Thr Gly Glu Leu Phe Ser Asn Leu Gln Asp

1107 1134
AGC CAT AAA CAA AAA GTA ACC AAA ACA AAA CGC TAT GAT ATT AAG GCT GAT ATC
Ser His Lys Gln Lys Val Thr Lys Arg Tyr Asp Ile Lys Ala Asp Ile

1161 1188
CAC GGC AAC CGC TTC CGT GGC AGT GCC ACC GCA AGC GAT AAG GCA GAA GAC AGC
His Gly Asn Arg Phe Arg Gly Ser Ala Thr Ala Ser Asp Lys Ala Glu Asp Ser

1215 1242
AAA AGC AAA CAC CCC TTT ACC ACC GAT GCC AAA GAT AAG CTA GAA GGT GGT TTT
Lys Ser His Pro Phe Thr Ser Asp Ala Lys Asp Lys Leu Glu Gly Phe

1269 1296
TAT GGA CCA AAA GGC GAG GAG CTG GCA GGT AAA TTC TTA ACC GAT GAT AAC AAA
Tyr Gly Pro Lys Gly Glu Glu Leu Ala Gly Lys Phe Leu Thr Asp Asp Asn Lys

1323 1350
CTC TTT GGT GTC TTT GGT GCC AAA CAA GAG GGT AAT GTA GAA AAA ACC GAA GCC
Leu Phe Gly Val Phe Gly Ala Lys Gln Glu Gly Asn Val Glu Lys Thr Glu Ala

FIGURE 27 (cont.)

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Fig. 27 (cont.)

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APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
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1377 1404
ATC TTA GAT GCT TAT GCA CTT GGG ACA TTT AAT AAA CCT GGT ACG ACC AAT CCC
Ile Leu Asp Ala Tyr Ala Leu Gly Thr Phe Asn Lys Pro Gly Thr Thr Asn Pro

1431 1458
GCC TTT ACC GCT AAC AGC AAA AAA GAA CTG GAT AAC TTT GGC AAT GCC AAA AAG
Ala Phe Thr Ala Asn Ser Lys Glu Leu Asp Asn Phe Gly Asn Ala Lys Lys

1485 1512
TTG GTC TTG GGT TCT ACC GTC ATT GAT TTG GTG CCT ACT GAT GCC ACC AAA GAT
Leu Val Leu Gly Ser Thr Val Ile Asp Leu Val Pro Thr Asp Ala Thr Lys Asp

1539 1566
GTC AAT GAA TTC AAA GAA AAG CCA AAG TCT GCC ACA AAC AAA GCG GGC GAA ACT
Val Asn Glu Phe Lys Glu Lys Pro Lys Ser Ala Thr Asn Lys Ala Glu Thr

1593 1620
TTG ATG GTG AAT GAT GAA GTT AGC GTC AAA ACC TAT GGC AAA AAC TTT GAA TAC
Leu MET Val Asn Asp Glu Val Ser Val Lys Thr Tyr Gly Lys Asn Phe Glu Tyr

1647 1674
CTA AAA TTT GGT GAG CTT AGT GTC GGT AGC CAT AGC GTC TTT TTA CAA GGC
Leu Lys Phe Gly Glu Leu Ser Val Gly Ser His Ser Val Phe Leu Gln Gly

1701 1728
GAA CGC ACC GCT ACC ACA GGC GAG AAA GCC GTA CCA ACC ACA GGC AAA GCC AAA
Glu Arg Thr Ala Thr Thr Gly Glu Lys Ala Val Pro Thr Thr Gly Lys Ala Lys

1755 1782
TAT TTG GGG AAC TGG GTA GGA TAT ATC ACA GGA GCG GAC TCA TCA AAA GGC TCT
Tyr Leu Gly Asn Trp Val Gly Tyr Ile Thr Gly Ala Asp Ser Ser Lys Gly Ser

1809 1835
ACC GAT GGC AAA GGC TTT ACC GAT GCC AAA GAT ATT GCT GAT TTT GAC ATT GAC
Thr Asp Gly Lys Phe Thr Asp Ala Lys Asp Ile Ala Asp Phe Asp Ile Asp

1863 1890
TTT SAG AAA AAA TCA GTT AAT GGC AAA CTG ACC ACC AAA GAC CGC CAA GAC CCT
Phe Glu Lys Ser Val Asn Gly Lys Leu Thr Thr Lys Asp Arg Gln Asp Pro

1917 1944
GTC TTT AAC ATC ACA GGT GAA ATC GCA GGC AAT GGC TGG ACA GGT AAA GCC AGC
Val Phe Asn Ile Thr Gly Glu Ile Ala Gly Asn Gly Trp Thr Gly Lys Ala Ser

1971 1998
ACC GCC GAA GCG AAC GCA GGG GGC TAT AAG ATA GAT TCT AGC AGT ACA GGC AAA
Thr Ala Glu Ala Asn Ala Gly Gly Tyr Lys Ile Asp Ser Ser Thr Gly Lys

2025 2052
TCC ATC GTC ATC AAA GAT GCC GTG GTT ACA GGT GGC TTT TAT GGT CCA AAT GCA
Ser Ile Val Ile Lys Asp Ala Val Val Thr Gly Phe Tyr Gly Pro Asn Ala

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Fig 27 (cont)

2079

ACC GAG ATG GGT GGG TCA TTT ACA CAC AAC AGC GGT AAT GAT GGT AAA GTC TCT
Thr Glu MET Gly Ser Phe Thr His Asn Ser Gly Asn Asp Gly Lys Val Ser

2106

GTG GTC TTT GGC ACA AAA AAA CAA GAA GTT AAG AAG TGA
Val Val Phe Gly Thr Lys Lys Gln Glu Val Lys Lys *

2133

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
DRAFTSMAN	

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FIG. 28

Alignment of *M. catarrhalis* Tbp2

APPROVED BY	O.G. FIG. CLASS	SUBCLASS	GRAFTSMAN
10	20	30	40
MKHIPITLCAVISAVLLTACGGSGGS-NPPAPTYIPNASGSGCNGNTGNTGAGGTUNTN-AGNTGTT--NSGTGSANTPEPKYQDVPTERNEDKUSSIQEFAM	50	60	70
...S.GF...S...GN...A...A...GGANS...A...GGA...A...S...K...DE.K.AE.G...	80	90	100
...VB.KLR.WIPQRQEEHAKI.TNDVVKLEGDLKHNPFDNSIMWONIK.SKEVQTIVNQEKNTRDQIK.EN.Q--RDPDKLDDV.L.AYI.K.IDDRRLTELA	4223	4223	4223
...YDQ...A...DNO...E...E...E...RENEQ..K...N...P...	S...	S.S...	R1
110 120 130 140 150 160 170 180 190 200			
GYGMALSKINLNHRQDTPLDEQNIIITLDGKKQVAEGKKSPLPFSLDVENKLLDGYIAKMNADKNAIGDRIKKG--NKEISDEKILAKOIK-BAVRKSHBFPQQV			
...VB.KLR.WIPQRQEEHAKI.TNDVVKLEGDLKHNPFDNSIMWONIK.SKEVQTIVNQEKNTRDQIK.EN.Q--RDPDKLDDV.L.AYI.K.IDDRRLTELA	QB	QB	QB
...YDQ...A...DNO...E...E...E...RENEQ..K...N...P...	S...	S.S...	R1
210 220 230 240 250 260 270 280 290 300			
LSSLLENNTIFHSNDGTTKATTRDOLKRYDGYYLANDGNYLTVKTD--KLMNLGPVGGVFYINGTTTAKELEPLPTQDAVYRKGHWDFMTDVANRRNPSEVKENSA			
KPIY.KN.NY.H.KQN.R...RS..IYRGYSNIIP...IAKT.FD.AL..Q..Q..VSQ...T...AKKGQSFS.FGTSQRL.			
...IKA.T...K...V.A...NP...S...S...S...K...TY...			
310 320 330 340 350 360 370 380 390 400			
GWTGASSSKDRYNRLLTKBCSAPDGHSFYGHSSEBFTVNFKEMKLIGKLFSLNQDRHKGNVTKTERYDIDANIHNGRPRGSATASNKNDT--SKHPFTSDA			
.DR.S.M.YH..PS...D.RNK..NYN...D.SK.S.K.E.S.I.G..S.N..K.Y...DTTASK...K			
...W...A.A...NY...E...S...OK...K.D...D.AEDSK...K			
410 420 430 440 450 460 470 480 490 500			
NRLEGGEIGPKGBELACKPLTNDNKLFGVFGAKRESKABEKTAII DAYALGTFTNTSNATT--FTPFTEKOLDNFGNNAKKLVLGSTVIDLVPTDATA--NEFTK			
S...NA...E.K...D...Q.GNV...KPGT.NPA...ANSK.E...KPGT.NPA...ANSK.E...DV...DV...			
E...K...K...V...			
510 520 530 540 550 560 570 580 590 600			
DKPRSATNEAGETLMVNDESVKTYG-KNFBILKFGLSIGSHSVFLQCBTATGKAVPIT'G'AKYLGWNWGYITGKDUTOT--GKSPTDAQVADF DI			
E...K...K...I...YGR...V...V...			
E...K...K...V...			
610 620 630 640 650 660 670 680 690 700			
DGNKSKSYSKKLITKGRODPFVSITQIAGNGWTGKIASTTIKADAGGYKIDSSSTGKSIAKRDANVTGGFYGPNAEMGGSFTINA-DDSKASVVPGTKRQQBVK*			
...BR...K...T.Q...N...A...NV...V.RN.K...DT...			
...RK...N...T.D...N...E...K...AE.N...V...V...V...T...SGN.G.V...K...K.I...K...			